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Therapeutic Gazette.

Whole Series, Vol. XIV. | DETROIT, MICH., PHILADELPHIA, PA., | November 15, 1890. | Third Series, Vol. VI. No. 11.

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Original Communications.

*ON THE TREATMENT OF AFFECTIONS OF THE STOMACH.**

LECTURE III.—ON CANCER OF THE STOMACH AND ITS TREATMENT.

By Professor Dujardin-Beaumetz,† Paris, France.

GENTLEMEN:—It may appear strange to some of you that I devote an entire lecture to the treatment of a disease reputed to be incurable. The reasons which I have to allege for so doing are twofold,—first, that in our practice we cannot always distinguish the curable from the incurable; and, second, that it is always our duty to do our best for our cases, whether they are cancerous or not. But the most weighty reason of all is, that the diagnosis of cancer and the problems connected therewith are points of the greatest interest in the clinical study of diseases of the stomach. Lastly, in the consideration of the subject, we shall find opportunities for testing the new methods of which I spoke to you in my last lecture.

Formerly the diagnosis of cancer of the stomach was regarded as simple and easy; no one doubted his ability to separate from the other chronic affections of the stomach cancer of that organ. To-day we are far from having the same assurance, and it may

* From advance sheets, revised by the author (translated by E. P. Hurd, M.D.). Lectures delivered in Cochin Hospital, Paris, France.

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be truly said that, in a great number of cases, it is not only difficult to diagnosticate cancer, but it is almost impossible to make a diagnosis.

This results from many causes, but especially from our ignorance as to the nature of cancer, and, in particular, of cancer of the stomach. Look over the works of our most eminent pathological anatomists,—those of Professor Cornil, for instance,—and you will see that all are agreed in assigning very little value to the word *cancer* itself, which seems destined to disappear from nosology. It indicates only a malignant affection of an organ, but the forms are so varied, the clinical evolutions so different, that it is difficult to group under the same title the divers affections to which we have been in the habit of applying the term *cancerous*.

With regard to cancer of the stomach, in particular, we are ignorant of its mode of development, and it is impossible to include in the same clinical description those encephaloid tumors which bud with extreme rapidity from the surface of the mucous membrane and fill the cavity of the organ and those atrophied cancers, scarcely visible to the naked eye, which accompany thickening and induration of the walls of the stomach.

It is, nevertheless, probable that all these forms of cancer have for their starting-point the epithelium of the gastric glands, and that this epithelium is the place of origin of those prolongations, veritable malignant nodules, which invade successively the other tunics of the stomach. But what I need to remind you of is the richness of this organ in lymphatics, which explains the propagation of cancer to the neighboring organs, and in particular to the glandular system.

If pathological anatomy furnishes us only obscure data of information on this question, let us see if clinical medicine is any better able to solve the problem of diagnosis and prognosis, and, for this object, we will follow the order which we employ in the examination of the patient, beginning with the general aspect of the patient, and continuing with the commemorative and functional signs, to terminate by the physical signs.

I will endeavor to be as brief as possible in the explanations into which I am about to enter, contenting myself by referring you to the writings which I have already published on the subject,* and to the thesis of one of my best pupils,—Dr. Deschamps, of Riom,—a thesis very cleverly written and based on facts gleaned in my service;† lastly, to a more complete general review recently published by Gaston Lyon.‡

I pass now to the study of the different diagnostic signs of which I have spoken.

The aspect of the patient may give you a hint as to the disease from which he is suffering, for of all cancers it is cancer of the stomach which is oftenest accompanied by a cachectic state, characterized essentially by emaciation and by the straw-yellow tint of the face. We may even say that in certain old people affected with latent forms of cancer of the stomach it is often the only symptom which is observed. But this cachexia is only the manifestation of a bad state of the nutrition, and you well know that it may be wanting at the onset of cancer, or even that it may exist in other affections of the stomach besides cancer, and, lastly, that it may manifest itself in affections foreign to this organ; so that this sign has a certain value, but this value is relative.

The age of the patient furnishes indications. It is chiefly after the age of fifty years that cancer of the stomach manifests itself, and the greater number of cases occur between the years of fifty and seventy. It is extremely rare before the age of twenty; and in an interesting thesis of Duzan,§ on one hundred and eighty cases of cancer in children, there was only one of cancer of the stomach; and the facts gathered by Marc Mathieu, and published in a thesis presented to the Faculty of Lyons, show that this case is altogether exceptional.‖

Hence mistakes of diagnosis have probably always been made in those cases of cancer of the stomach which have been reported as occurring in young people or in children.

The duration of the disease may also furnish certain useful indications. Although I can assure you that cancer of the stomach may run its course much more slowly than is generally thought, it is, nevertheless, true that, when a patient has been complaining ten years of an affection of the stomach, we ought to exclude the idea of cancer. At the same time, do not forget that we may see cancer graft itself on an old affection of the

* Dujardin-Beaumetz, "On Cancer of the Stomach" in "Diseases of the Stomach and Intestines." New York, 1886.

† Deschamps (de Riom), "Diagnosis and Treatment of Cancer of the Stomach" (*Thèse de Paris*, 1884).

‡ Gaston Lyon, "Diagnosis of Cancer of the Stomach" (*Gaz. des Hôpitaux*, February 15 and 22, 1890).

§ Duzan, "Cancer in Children" (*Thèse de Paris*).

‖ Marc Mathieu, *Thèse de Lyon*, 1884.

stomach. Physicians have seen, and I have myself observed, cancers of the stomach develop around a cicatrix of an ulcer of the stomach. A person may have had chronic gastritis, and this shall afterwards be followed by carcinoma.

As you see, all this detracts very much from the diagnostic value which is attached to the duration of the disease.

The functional troubles furnish indications a little more precise; the pain, for instance, which in cancer of the stomach has no great diagnostic value. Physicians have seen cancers run their course and terminate in death without any pain, while certain forms of painful dyspepsia are accompanied by extremely severe pain. Pain exists ordinarily when there is ulceration of the stomach, but this ulceration is seldom the result of a cancerous process. The pain is sometimes caused by attacks of peritoneal inflammation around tuberculous masses.

I may say as much for the anorexia. Loss of appetite is met with in a great number of affections of the stomach, and that of cancer has nothing special connected with it. I may add that there are patients in whom the appetite remains good till the last period of the disease. I have before cited the case of a man who was an occupant of one of our wards, who, to the last day of his life, demanded and digested foods of a relatively indigestible character,—such as egg salad, lobsters. The autopsy revealed the presence of a large, sheet-like cancer of the stomach (*cancer en nappe*).

For a long time vomiting of blood, and in particular coffee-ground vomiting, has been considered as characteristic of cancer of the stomach.

This is a mistake, for these vomitings indicate but one thing,—the presence of ulcerations of the mucous membrane of the stomach; and as there are cases of gastritis with ulceration of the mucosa, it is plain that these vomitings may take place apart from cancer. But bear in mind that, when they are often repeated, they constitute one of the symptoms which serve to support the diagnosis.

As for vomitings of food, they may exist or be wanting; they exist whether the cancer be situated at the cardia or at the pylorus. They may be wanting when these two orifices are intact, whatever may be the extent of the cancer. The only characteristic vomitings are those which are produced at the advanced periods of the disease, and when the patient vomits, chiefly in the morning, fasting, a cancerous ichor of extremely fetid odor.

I pass now to the local examination of the patient.

This examination enables us to note the state of the stomach and abdomen, and especially the presence of a tumor.

As for the state of the stomach, all depends on the seat of the cancer. If this obliterates the cardia, the stomach contracts, and its size does not exceed that of the large intestine; the belly is excavated, and to such a degree that the intestinal mass disappears almost completely. Is the cancer seated at the pylorus? There is enormous distention of the stomach, the *bruit de clapotement* (splashing sound) is heard, there is thickening of the muscular coat, and the contractions of the stomach are visible to the naked eye. But when the cancer is seated at the lesser curvature, or when it does not close the orifices, the stomach may preserve its ordinary size and form.

It is in the existence of the tumor and its detection that we find the most important sign of cancer of the stomach. In fact, when you plainly feel a firm, nodular tumor, slightly painful to pressure, associated with general disturbances of nutrition, and the functional troubles of which I have spoken, you are generally warranted in affirming the diagnosis of cancer, and yet what chances of mistake! First of all, we have frequently a false sensation of tumor, due entirely to contraction of the recti abdominales muscles. You are all familiar with those fibres which cut transversely the recti muscles. When the patient experiences a pain in some part of the abdomen, he involuntarily contracts these segments of the recti muscles, which then give to palpation and percussion the sensation of a limited and irregular tumor. Moreover, any of the viscera of the abdomen may be the starting-point of tumors, benign or malignant.

But, while on the subject of diagnosis, I may remind you that there are benign tumors that may be confounded with cancer. There is, first of all, right renal ectopia. As this ectopia always accompanies a dilatation of the stomach, which itself produces functional troubles of digestion, you readily understand how the mistake has been made of confounding a tumor of this kind with cancer of the pylorus. Then we may have fæcal tumors, seated in the transverse colon or at the angles of the colon, and on a level with the stomach. Lastly,

there are certain tumors of the liver relatively benign, as hydated cysts, which may be mistaken for gastric cancer. During this local examination you will note any œdema that may exist, and see if there be present *phlegmatia alba dolens*. You all know the saying of Trousseau *à propos* of Soubeyran. There was a long discussion respecting the nature of the gastric affection from which the latter was suffering. When it was told to Trousseau that Soubeyran had phlegmatia alba dolens, he exclaimed, "This is all that I need to warrant me in affirming that he has cancer of the stomach;" and the event proved that he was right.

This phlegmatia has not the value that Trousseau attributed to it. It accompanies various cachectic states, and may exist apart from them; it has, then, only a secondary importance.

This is not the case with the appearance of indurated glands in parts more or less distant from the stomach. In 1886, Troisier* showed the value of this symptom. Although this distant adenopathy may be symptomatic of any of the cancerous affections of the thorax and abdomen, it is none the less true that it is frequent in gastric cancer, since it has been noted in fourteen out of twenty-seven cases.

These glands, which are hard and nodular, are generally found in the subclavian triangle at the middle third of the clavicle. Sometimes they are seen in the axilla or in the groin.

Unfortunately, they only manifest themselves in the advanced periods of the disease, at the time when other signs more important are apparent.

As you see, gentlemen, no one of the symptoms of cancer of the stomach is absolutely pathognomonic. It is from the sum of these symptoms that the diagnosis should be made; and yet, even in these circumstances, you will often find reason for hesitating; and in order to overcome this hesitation, you will be obliged to have recourse to other signs, some associated with the direct examination of the gastric juice, others with the examination of the urine.

It was Van den Welden who, ten years ago, first called attention to the disappearance of free hydrochloric acid from the gastric juice in cancer of the stomach, and the first trials made by Riegel confirmed the remarkable value of this sign, as he never found in cancer of the stomach free hydrochloric acid. But soon other observations appeared, and in particular that of Ewald, of Cahn, and of Mering, which showed that cancer might exist with conservation of free HCl.

To-day the question seems to be decided, and the diagnostic value of the absence of free hydrochloric acid in cancer of the stomach is absolutely secondary, and this is the reason: First, we have learned, as Ewald, confirmed by Hayem, has shown, that in the physiological and normal state man has no free hydrochloric acid in the stomach; then, that a great number of affections of the stomach may be accompanied by absence of this acid. So, when in a patient supposed to be affected with cancer of the stomach you find hydrochloric excess, and this, after repeated examinations, the conclusion is forced upon you either that the patient has round ulcer of the stomach,—a disease characterized by such excess—and it is the only disease where "hyperchlorhydria" is constant and well pronounced,—or that you have cancer of the stomach complicating round ulcer. Rommeläre was the first, in 1883, to lay down this law: that when the quantity of urea excreted in twenty-four hours remains for several days above twelve grammes, you must exclude the idea of a malignant tumor. He has applied this datum to all malignant tumors, including cancer of the stomach.

I took the first opportunity, after reading the paper of Rommeläre, to test this law in reference to cancer of the stomach, and you will find in the thesis of my pupil Deschamps, of Riom, the result of my researches. This result was as follows: If, in the majority of cases of cancer of the stomach (and this is especially applicable to the advanced periods), the law of Rommeläre is found to be confirmed, it is because in these cases nutrition is profoundly impaired; for this deficiency of urea-secretion (hypoazoturia) is not peculiar to cancer, but characterizes all pathological states which profoundly disturb the economy and modify nutrition; and if, in cases of cancer of the stomach, this hypoazoturia is met with frequently, it is because it is an affection which, by the disorder which it inflicts on the functions of the digestive tube, the most rapidly depresses nutrition.

Gregory (*vide* thesis), Albert Robin, and Kirmisson have arrived at the same conclusions.

To sum up: The diminution of the figure of urea below twelve grammes in the twenty-four hours is but a complementary sign, which

* Troisier, *Soc. Méd. des Hôp.*, 1886.

indicates chiefly the general failure of nutrition in the patient.

As you see, gentlemen, the new signs which were supposed to be so pathognomonic have not the diagnostic value which has been attributed to them, and we are still compelled in diagnosticating this affection to base ourselves on the symptomatic and clinical aggregate which the patient presents.

In certain cases the diagnosis will be plain enough, while in others you will be compelled to suspend a positive opinion, and the most careful and painstaking will sometimes make mistakes. I may be allowed to mention two cases of erroneous diagnosis which are matters of history. The one is the case of Milne Edwards, the celebrated physiologist. At the age of forty years he was pronounced by one of the most competent authorities of the day to be suffering from cancer of the stomach; he, however, did not die till forty years afterwards. The other case was that of Claude Bernard, who, at a certain time of his life, was believed to have cancer of the stomach; this proved to be a mistake, and he afterwards died of a uræmic trouble.

The prognosis of cancer of the stomach is based entirely on the nature of the cancer and its seat.

Unfortunately, from the point of view of the nature of the cancer, we have but vague data. We know only that certain cancers make rapid progress, while others have a very slow course, and, in his thesis, "On Precocious Cancer," Marc Mathieu has mentioned numerous cases of these forms of cancer.

But what it is important to know is the slow forms. There are atrophic cancers of the stomach whose development may be very tardy, and which, singularly enough, may present such ameliorations in their course that one may be led to exclude the idea of cancer; and, in this connection, I may cite the following curious fact: We admitted to Cochin Hospital a woman who had all the symptoms of cancer of the stomach, and the presence of a tumor confirmed the diagnosis. We subjected the patient to an appropriate dietetic regimen. Her condition improved, she regained weight, the digestive functions were restored, and she became, in fact, so much better every way that we thought we had made a mistake in our diagnosis. This improvement lasted almost a year; then the digestive functions were again disordered, and she re-entered the hospital. The day of her admission she was taken with vomiting, with intense pain, and succumbed in several hours. At the autopsy, we found a cancer in the pyloric region, not, however, involving the pylorus; this cancer had ulcerated, and had caused perforation of the stomach.

I may also mention the case of a patient whom I saw at Saint Denis, with Dr. Leroy, of Barres. This patient had been following for ten years a milk regimen, which had been prescribed for an affection of the stomach, supposed to be cancerous. I made my examination, and, considering the duration of the disease, I was disposed to doubt the existence of cancer. The patient died a year after, and the autopsy showed the disease to be unmistakably cancer.

But what renders the diagnosis so difficult, is the possibility of the development of cancer on the cicatrix of a round ulcer, and the observations of Hanot, of Debove, of Landouzy, of Muschir, are in this connection of exceeding interest.

If our knowledge as to the nature of cancer, from the point of view of prognosis, is very deficient, we certainly have more exact information respecting the prognostic signs derived from the seat of the cancer. It is, in fact, quite easy to understand that a lesion of very little extent, affecting either the cardia or the pylorus, but obliterating these orifices, may entail functional disorders so grave that the case may be rapidly fatal.

Of all cancers of the stomach the most grave is that of the cardia, for it renders feeding of the patient impossible, and death by starvation soon ensues. Here the diagnosis is generally easy: the age of the patient, his cachectic state, the presence of indurated glands in the supra-clavicular region, lastly, direct examination by the œsophageal tube, will furnish precise indications.

Next, in point of gravity, as far as prognosis is concerned, is cancer of the pylorus. Here the local symptoms are the inverse of those observed in cancer of the cardia. While in the latter affection the stomach becomes atrophied, so as to disappear almost altogether, and the intestinal mass itself undergoes a progressive shrinkage, so as to give to the abdomen an excavated aspect, in cancer of the pylorus, though there may exist atrophy of the intestinal mass, the stomach takes on an enormous enlargement. Not only is there dilatation of the stomach, but there is thickening of its muscular layers; and it is in these cases that one may see mapped out through the abdominal walls the automatic movements of the stomach. The

patient has vomitings, infrequent but very abundant, in which is seen food eaten several days before. Lastly, it is possible to find in the region of the pylorus an induration corresponding to the part affected, especially if you take care to have the patient make a full expiration, so as to depress the liver and the pylorus.

As it has been proved that the stomach may absorb liquids, and even peptones, necessarily the duration of life is longer in cancer of the pylorus than in cancer of the cardia. But pyloric cancer is still a very grave form, notwithstanding the conservation in certain cases of pepsin glands. At the same time, do not forget that there is often concomitant atrophy of the mucous membrane, and that this destruction of the pepsin glands augments still more the functional troubles caused by cancer of the pylorus, even when the latter is of but little extent.

Next in order comes that form of cancer which affects well-nigh the totality of the stomach,—cancer in mass, or *sheet cancer*,—whose presence is sometimes compatible with the apparent conservation of the gastric functions. This is a latent form of cancer, which is sometimes seen in old people.

Lastly, from the point of view of prognosis, the least grave of the cancers of the stomach is that which infiltrates the lesser curvature without obliterating the cardia or pylorus. It is also the form which is most difficult to diagnosticate, for in these cases it is impossible to perceive the tumor. It is, moreover, the kind of cancer which is least likely to be attended with perforations.

Such, in brief, is the prognosis of cancer of the stomach. It remains for me, in concluding this lecture, to speak to you of the treatment, for even if you have the certainty of an irreproachable diagnosis, it is your duty to give your cancerous patient the benefit of the best possible treatment, and as a mistake in diagnosis is always possible, there is hope that your patient may be benefited more than you expect; and, indeed, patients have now and then got well whose condition seemed hopeless. I may remind you of a case, which is to-day a matter of public talk, the subject of which is a coach-maker, well known in Paris, who was cured of a so-called cancer of the stomach, as reports say, by a quack prescription, in which a principal element was wearing *shirts of a certain color;* an appropriate dietetic regimen was, however, insisted upon. You should, then, never despair of the recovery of a patient affected with cancer of the stomach. If you succeed, it is a proof that you were mistaken; if you fail, it is because your diagnosis was correct.

The treatment includes several particulars,—a general treatment, which is applicable to the cancer when it does not affect the orifices, and a special treatment for each of the varieties which I have mentioned, cancer of the cardia and cancer of the pylorus.

To meet the first indications it is necessary to practise antisepsis of the stomach, and order an appropriate dietetic regimen.

Antisepsis of the stomach should have for its basis salicylate of bismuth, naphthol, or salol. You may give before each meal some one of the antiseptic powders, whose formulæ I have given you on several previous occasions. Formula No. 1 consists of salicylate of bismuth, English magnesia, and bicarbonate of sodium, of each five grains, in one powder; to be given in capsule before meals.

Formula No. 2 consists of salicylate of bismuth, beta-naphthol, and charcoal, of each five grains, in one powder; to be taken as above indicated.

Formula No. 3 consists of salicylate of bismuth, salol, and bicarbonate of sodium, of each five grains, in one powder; also to be taken in capsule, before meals.

The second indication is to alleviate the often atrocious pains of the disease. For this all the opium preparations may be employed. You will use then the English black drops (acetum opii), paregoric elixir, opium pills, especially injections of morphine, which you will associate with atropine, injecting, for instance, a hypodermic syringeful of the following solution:

℞ Morph. mur. (or sulph.), 10 centigrammes (1½ grains);
Neutral sulphate of atropine, 10 milligrammes (⅙ grain);
Sterilized water, 20 grammes (5 drachms). M.

If the injections of morphine should have the evil result of producing morphiomania, this is of comparatively little consequence in a carcinomatous patient, and in these incurable and painful affections we cannot get along without this incomparable analgesic.

Then you will indicate the dietetic regimen; this should be absolutely vegetarian. It is, in fact, a rule of therapeutics to let a sick organ rest. The stomach is an organ doomed to almost constant activity; but what we can do is to reduce to a minimum the work of digestion, and this is the more indicated, since, in the majority of cases of cancer, there is a diminution in the digestive

activity of the gastric juice, and you will attain the desired end better with a vegetable than with a mixed diet.

When the cancer is seated at the cardia, the indications are the same as in stricture of the œsophagus; that is to say, apart from the surgical procedures,—of which I shall further speak,—it will be necessary to nourish the patient with liquid or semi-liquid food. It is in these cases that the meat-powders render us important service.

Cancer of the pylorus, when it is accompanied by dilatation, may be treated by lavage of the stomach. I do not mean by this that lavage is curative, but it enables us to *dress* the mucosa, to rid it of ichorous products secreted by the cancer, and even to calm sometimes the gastric pain provoked by the ulceration. You can employ naphthol solutions, 1 to 1000, for lavage, or the mixtures of salicylate of bismuth and salol, of which I have before spoken.

As for the question of surgical interference, it is sure at some time to come up in connection with cancer of the pylorus or the cardia. For pyloric cancer, ablation of the pylorus—gastrectomy—has been recommended. This operation, proposed for the first time by Péan, was formerly attempted by several surgeons, but was speedily abandoned because of the grave disorders which it entails. Billroth has proposed the much more sensible operation of establishing a communication between the stomach and a point of the intestine near the duodenum. He has thus perfected the operation advised and executed for the first time in my service by Surmay, of Ham, who made an opening from the stomach into the duodenum.

As for cancer of the cardia, besides catheterism, whether permanent, as proposed by Krishaber, or temporary, by intubation of the œsophagus, recently counselled by Berger, besides electrolysis, advised by Fort, surgeons have proposed the operation of gastrotomy,—*i.e.*, the formation of an artificial fistula, through which food may be directly conveyed to the stomach.

All these surgical procedures, however skilfully they may have been performed, have given but sorry results in cancer of the stomach, for such operations can only be proposed at an advanced period of the disease. The patient is then in a condition of inability to rally from the surgical traumatism, and even if he does rally, he generally obtains a new lease of life for only a few months or a few weeks, for, as pathological anatomy has shown, cancer of the stomach is rarely solitary, and in the majority of cases there are concomitantly cancers in other viscera, whose progress speedily entails the death of the patient.

Such are the considerations which I desired to present in relation to this interesting subject, and I pass to the study of a disease which has latterly tended in a measure to revolutionize gastric pathology, — namely, dilatation of the stomach.

THE CLIMATE OF SOUTHERN CALIFORNIA: ITS EFFECT ON CHRONIC BRONCHIAL CATARRH WITH AN ASTHMATIC TENDENCY.

PERSONAL EXPERIENCE OF NEARLY THREE YEARS.

By F. Gundrum, M.D., Escondido Valley, Cal.

IN this article I wish it to be understood that I shall allude only to the effect of this climate on my own affection, and also that my experience has been limited within San Diego County, and not exceeding a distance of seventeen or eighteen miles from the great Pacific.

At some future time I hope to be able to give to the profession a more extended account, or, to speak more correctly, an account of a more extended research.

Scarcely anything is known of this region (San Diego County), except on the immediate coast, for so laborious and difficult and aggravating are the means of transportation, and so crude and unpleasant the accommodations in the interior, that very few have the courage to undertake the trip.

Still, from what little experience we have, I believe I will not be saying too much that, when convenient and pleasant methods of transportation are provided, and proper establishments erected for the care of invalids, this section of country will be second to none on the globe.

The therapeutic value of climate has received more and more attention for the last twenty-five years, and its benefits are more and more clearly seen and taken advantage of; and as our knowledge is extended and more accurate and correct observations are made as to the adaptability of the different climates to the different affections, the more benefit will be derived from this therapeutic agent.

There is, in many instances, a tendency, especially if financially interested, to give a

colored and one-sided view of the climate of which the person is speaking or writing. I am certain that this mistake has been made in respect to this region, as well as to many others. I have seen many persons that have come to this coast, either from their own choice or at the advice of their physicians, who were made much worse; and I have seen people come here that were perfectly well East, who acquired and remained in poor health until they returned East again.

I am thoroughly convinced that we need more clinical observations in regard to the effect of the climate on individual diseases; not only that, but the stage of the diseases and the peculiarity of the individuals.

It is a pretty well-established truism that what is curative in one person is not so in another, and this is true in climate as well as in reference to articles in the materia medica.

I have been led to give my personal experience in this climate in the hope of being of some benefit to the medical practitioners who may desire to give their patients the benefit of climate, especially those of the eastern portion of the United States. It is as important to know where not to send a patient as it is to know where to send him.

I desire, before entering upon my real task, to give a brief clinical history of my own affection, which may possibly be of some use in connection with the whole subject.

My maternal grandmother died at the age of 56 of cardiac dropsy. My paternal grandmother died of some chronic pulmonary trouble at the age of 65. Both my grandfathers died extremely old. My father died at the age of 46 of an accident, and my mother at the age of 71 of acute phthisis. Both my parents were remarkably strong and healthy until their last illnesses. At five years of age (before which time I was very healthy) I contracted some acute pulmonary trouble, of which I was sick eight or ten weeks. After that I was and remained a little "wheezy."

I became very healthy, with the exception of a little shortness of breath on running or hard exertion, and wheezy when I took a cold. While attending medical lectures at Ann Arbor, in 1866 and 1867, I had my first severe attack of bronchial catarrh, which remained about four months.

After graduating, in 1868, and serving in the Cincinnati Hospital for one year, I started practice in Ionia, Mich., where I remained until the close of 1887.

The exposure incident to a large country practice, coupled with a considerable amount of carelessness, gradually developed the condition for which I was forced to change climate. Under constant exposure during the inclement fall, winter, and spring months, my attacks of bronchial catarrh became more frequent and stayed with me longer, and the irregularity of my meals added another unwholesome friend in the shape of dyspepsia.

In February, 1875, I had a severe pneumonia (acute lobar), and in 1877 I got a dose of sepsis from a surgical wound, which came near being very serious. In February, 1880, while making a post-mortem for the late Dr. C. H. H. Sayre, in New York, I accidentally wounded myself, and had a narrow escape after a long illness. My health remaining poor for over a year, I again settled in my old field of labor, and gradually grew better, but never my former self.

My bronchial trouble gradually gained on me, to which was added a decided asthmatic tendency. My lungs now took on an emphysematous condition, which gradually grew on me.

The last two years of my stay in Michigan it was very hard work to exert myself much; going up a slight ascent or climbing a short pair of stairs would "take my wind," and I could be heard to "wheeze" for a rod or more. I lost my ruddy complexion, turned sallow, and my heart began to show signs of weakness, and I concluded it was about time to try a different climate.

It may be as well to also state that my weight went up to two hundred and four pounds after five or six years, and remained so, and that the last seven or eight years small patches of eczema showed themselves about my fingers, palms, and anal orifice.

Being somewhat undecided where to go, a letter from an old friend and also a medical practitioner, from San Diego, Cal., induced me to come to the Pacific coast. I arrived in the beautiful city of San Diego December 27, at the height of the great boom. After a night spent in the city, we repaired to the house of my friend, two and a quarter miles east. We arrived during and in the middle of the rainy season. Everything was saturated with moisture,—earth and air, and everything else. The great boom had exhausted the coal, and wood was scarce and wet. Our clothes felt damp on our bodies, the bed felt wet when we retired, and our clothes in the morning felt as if they had been lying in water all night. The result was I took a severe bronchial attack. My little daughter, aged 5, had a severe attack

of acute bronchial inflammation. My wife, who remained free from any sort of bronchial trouble, had a rather severe attack of catarrhal inflammation; and my boy, 7 years old, did not escape. We stayed here some six or seven weeks, when we moved to Coronado Island, just across the bay from San Diego. Here things were much "moister," and I could not stay at all. We then moved into the city, and took rooms on a considerably elevated position on the second floor on the south side of the house. During the damp weather we kept a small fire in the room most of the time. We got along much more comfortably. After a stay of three months here I removed to a still more elevated position, where I remained for over a year.

The first thing that struck me very forcibly was that our bronchial troubles hung on in spite of remedies that helped us very quickly in Michigan, and this was fully substantiated in my treatment of other cases afterwards, and was noted by other practitioners.

Many persons visited San Diego during this winter, some to ride on to fortune, some to combine business with the beauty of the climate, and many came entirely for their health. Many died during this winter (1887 and 1888) from bronchial and pulmonary inflammations. This was carefully and cautiously dealt with by the local press, for fear the intelligence, if it should find its way East, might damage the city's present and future interests. It is nothing more than fair to state that some of the deaths were, no doubt, due to carelessness, and others to the lack of proper accommodations.

As spring and summer came on I improved some, but mostly as to the functions of my stomach. My cough grew some less, as well as expectoration, and I was in hopes that as the summer advanced my improvement would make considerable progress.

Although I improved some during the summer, I did not gain much strength. I breathed somewhat easier, which, I think, was principally due to a diminution of gas in my stomach, which gave my diaphragm free play. During the summer it seemed impossible to keep from taking cold. After a walk or other slight exercise, if I sat down to rest, or jumped on a street car, it would not exceed from three to five minutes until I would be sneezing, and feel a congestion of the nasal mucosa coming on. I opened an office, and started in practice, and found, to my surprise, that I was much more frequently consulted for acute catarrhal troubles in this extremely mild climate than I was in Michigan during the same (summer) months.

As winter, or the rainy season, came on again my old friend returned. Taking frequent colds, the catarrhal symptoms returned, attended by the "wheezing." I might here mention that I never had a true spasmodic seizure. I was learning by self-experience and also from old residents that extreme care was necessary to keep from "catching cold."

I treated quite a number of acute lobar pneumonias, also catarrhal pneumonias in children, and while I can't say they ran a more violent course than in Michigan, I can say, with positive certainty, that they ran a more asthenic one. Such cases of catarrhal troubles of the respiratory tract as are usually seen in office practice (I mean those only of a more or less acute variety) I found were treated with much less satisfaction than I had been used to. In my practice in the East one or two office visits, at the outside three or four, sufficed to allow the patient to dispense with his medical adviser, but not so here in the majority of cases. I also discovered the class of remedies I had used East were of little benefit here, and, in fact, in many cases actually made matters worse.

The best was a tonic course of treatment with extreme care on the part of the patient to keep from adding to his disease by "catching fresh and repeated colds." But quite a proportion of patients would not get well with any remedies, and had to be sent to the interior, — to Romona, Julian, and other places, — to a higher altitude and dryer climate.

This was the experience not only of myself, but quite a number of other physicians with whom I talked. Most of these patients got relief in a very few days, soon recovered, and returned. Others had to spend a longer time for complete restoration.

During the latter part of November, 1888, a friend invited me to take a trip to Romona, situated in the Santa Maria Valley, thirty-five miles northeast of San Diego, about twenty-three or twenty-four miles from the Pacific Ocean, with an elevation of about fourteen hundred feet.

We only remained two days, but my breathing became much relieved, and my "spirits" better, and I was sorry I could not stay longer. On our return, when we got up on the high mesa (foot-hills) east and about seven or eight miles from San Diego,

I felt a decided change come over me. Here the ocean breeze had a fair sweep at us, and I soon felt its effects. I began to feel somewhat chilly, and immediately put on an extra garment. Then I began to sneeze, and, after a short time, there was a mucous discharge from my nose. After riding for a mile or a mile and a half I began to feel a burning sensation in my pharynx and larynx, which extended down the trachea and larger bronchi. I soon began to cough, and while I wasn't blowing my nose I was coughing.

Having gained nothing in strength and very little in relief to my troubles of the respiratory apparatus in San Diego, and feeling so good and light in breathing and spirits in two days' time at Romona, and having a demonstration in my ride home from the interior so cogent, so patent, that the ocean air was a constant irritant on my respiratory organs, I determined to seek the interior of the country for relief.

I myself and a medical acquaintance who came to the coast for incipient phthisis came to this valley in the latter part of 1888. We had heard much of its beauty, fertility, and great sanitary superiority. I might here digress enough to say that all places in Southern California, in the minds of the inhabitants, have a considerable advantage over their neighbors in these respects, and the only way you can find out for yourself is to settle down.

As there was no other place in the interior of the country that offered as good advantages socially, educationally, and otherwise, we purchased some land, and started on our new career. I might say while digressing that the greatest and most important difference between ranching—or rather putting out orchard and vineyard, and the other labors and duties incident to ranch life—and the practice of medicine is that in ranching your mistakes stare you in the face, and you pay dearly for them yourself, while in the practice of medicine you bury them and the other fellow pays for them. I would like this to be considered by the profession before they turn "ranchers."

The muscular exercise incident to my new departure soon reacted on me very favorably. My stomach soon assumed a functional capacity that surprised the cook. My muscular system increased rapidly in power. For the last six or seven years, I might say since my septic attack in New York City, my heart had gradually lost power, and my pulse-rate had gone up from 66 to 68 per minute to 84 to 90, while the pulse at the wrist had lost in vigor and force. My pulse gradually gained in volume and force until it reached its normal condition again. My cough and expectoration became less, my breathing better, and new "attacks" became much less frequent. This improvement continued during the spring and summer of 1889, and I became very sanguine that I should become a well man again, excepting the emphysematous condition of my lungs. In this I was encouraged also by knowing of several other cases that were very much benefited or cured here, and by my little daughter, who had frequent attacks of bronchial catarrh at San Diego, recovering entirely. Again, my son had nasal catarrh almost from birth, which gradually made its way up the Eustachian tubes and into the middle ears, producing a considerable deafness, which grew worse from year to year. This became somewhat better at San Diego the first nine or ten months, but came to a stand-still, and then gradually receded, in spite of treatment, but after coming here he gradually grew better. Catarrhal symptoms grew less and the hearing better, and he has entirely recovered without treatment. As further evidence that the climate in the vicinity of the Pacific Ocean is inimical to my mucous membrane, I will state that for the first year after coming here every time I approached the ocean within three or four miles I began to sneeze and feel that "raw" feeling in my respiratory tract. This effect is also produced when occasionally we get a pretty strong cold west wind, attended by a heavy fog, making the atmosphere raw and cold.

The winter of 1888 and 1889 was an extremely pleasant one, rather dry, which was greatly to my advantage, and the summer and the greater portion of the fall were, of course, dry and suited to my condition, under which influences I made great headway.

But, as the rainy season came on, the old trouble again made its appearance, and as the last winter was a very wet one, my troubles have gradually reasserted themselves, and while I am infinitely better than in Michigan, and considerably better than in San Diego, I still take colds, sneeze, cough, expectorate, and play that disagreeable tune of "wheeze" once in a while. There is a low mountain range between here and the ocean, about six miles from my place, which somewhat breaks the force of the wind from the ocean. I am much better off on the land side of this range than on the ocean side.

This experience has been confirmed by the experience of others. Several cases of asthma of the spasmodic variety, that could not live at or near San Diego, were relieved as by magic in this valley.

There is something inimical in the atmosphere on the Pacific coast to sensitive respiratory mucous membrane. This is not alone confined to the human race. Other animals suffer from its effect. This is especially true all along the coast range with chickens. Many a poultry enthusiast has found it out to his sorrow. About three years ago a gentleman imported about three thousand birds from Iowa to El Cahon, twelve miles from the coast, and they nearly all died within a year. Chicks, especially before they are nine or ten months old, are liable to disease, and, strange as it may seem, this is worse in spring and summer than in winter. The birds take cold, the first symptom being a slight nasal catarrh; the discharge glues up the anterior nares; the discharges are retained; septic conditions take place in the mucous and muco-pus; the head and eyes swell up; systemic infection takes place, and if not cured by "Dr. Hatchet," the bird dies. In others the catarrh extends into the bronchi and vesicular structure, attended by asthmatic symptoms. On auscultation I have been able to clearly obtain some fine sibilant and subcrepitant râles. I have often stood outside of the coop at night and heard such birds "wheeze."

What is it that is so inimical to the respiratory organs on the Pacific coast?

A glance at San Francisco's mortality (from Health Report, 1890), from January to April, inclusive, where phthisis heads the list, pneumonia comes second, and bronchitis fourth in the list of causes assigned, is more than a hint.

While this will, no doubt, be reduced as we go south, I believe the same relative conditions will be found and the same causes at work.

Four conditions found on the coast may deserve the most attention in the probable causation:

1. The mildness of the climate.

2. The atmosphere, with its temperature and moisture, or humidity.

3. A depreciation of the systemic tonus and heat-centres.

4. Too great a variation in the diurnal temperature.

The nearer the ocean the milder and more even the daily temperature, and this is true the year round. Consequently the heat-centres of the organism are called to perform their function to a very little extent, consequently cold isn't tolerated, and people, horses, chickens, and other animals will shake and shiver here as much with a temperature of 35° or 40° F. as in Michigan at 10° or 15° above zero. I have driven in the country here wearing as heavy clothes—the same ulster, gloves, and buffalo-robe—that I had in Michigan winters, and did not feel any too warm.

During the warm weather near the coast, the air being heavily charged with humidity, there is very little evaporation of the body moisture, consequently the body feels clammy, and your underwear "sticks" to you, and this is one of the causes of frequent "colds."

The ocean atmosphere is most of the year considerably cooler than the terrestrial temperature, and, taken in conjunction with the force with which it comes, it soon chills you when warmed up, unless you put on extra "wraps." This custom is observed by the old settlers with the greatest care. He who fails to do this will not fail to contract "a cold."

While I believe that a weakened constitution can live longer and more comfortably here, I have every reason to believe that this climate will not produce as strong and vigorous people as New York or Michigan; in fact, any of the Eastern States. People do not possess the vital resistance against the inroads of diseases as in more rigorous climates.

Much has been written of the small variation of the annual temperature, but not so much of the diurnal variation, which, I think, is of considerable importance to invalids. This may vary from 10° or 12° to 30° or more, depending on the time of year and location, the extent of variation increasing from the coast inland from the increase of terrestrial radiation during night. There is a wide variation in this particular within the limits of San Diego County.

Unless this is guarded against by artificial heat and extra "wraps," it cannot help but have a prejudicial influence on invalids.

Referring again to the wind, I forgot one important particular,—viz., its celerity. This is so great in many places, where the wind has full sweep, that many cannot live at such places. I have seen quite a number who were compelled to leave such places, being near the ocean, with nothing to break the force of the wind. In such places the wind is cold, "raw," and disagreeable,—too severe for most delicate constitutions. Even some

persons who have no pulmonary troubles are compelled to leave on account of other troubles that arise.

Another disagreeable factor I must mention before coming to a conclusion,—the fogs. These occur most everywhere until we reach a high altitude and get farther into the interior. But go anywhere, and ask the inhabitants if they have much fog, and they will stare at you in surprise, and tell you, "*Very seldom indeed.*" The same report was given in this valley; but, I am sorry to say, the people had forgotten, to say the least. Having selected rather an elevated spot for my "ranch home," to where the fog does not always rise, I often look down in the valley, seeing nothing but the tops of the tall sycamores and two-story residences, which look as though they were floating in a lake. While I have not kept track of the nights and mornings we have fog, I think I shall not be out of the way to put it down as one-third. While these fogs do not detract anything from the general sanitary advantages, and give much relief during the summer both to vegetation and the human inhabitants, they always "stuff me up," producing cough and the musical râles.

I have extended my article beyond my intentions, and must come to a close. There is much that is wholesome and beautiful about the climate of Southern California, and many persons are restored to health, but it is not a universal panacea. That the coast range is not fit for the majority of pulmonary troubles, but especially those with sensitive mucous tracts, I am entirely satisfied, and while there can be no doubt that some have recovered their health entirely right on the coast, the majority do badly, and have to leave for the interior or other regions. Many I have seen that gained for a short time, but it did not "hold stitch." As I stated in the beginning of this article, I believe there is the finest and most varied climate in this county of any place in the world and in so small a space of territory.

Did we have the proper railroad facilities, an invalid could be transferred from five thousand to six thousand feet altitude in less than an hour, from snow-capped mountains to a warm, sunny, and delightful region, full of flowers, green grass, and trees in the middle of the winter; transferred within two hours from the most humid to the driest atmosphere, etc.

But we must have more data of what class of patients will receive the most benefit, for we are too far from the centre of population and invalids to do much guessing. The trip is too far and too expensive and tedious.

ESCONDIDO, CAL., September 15, 1890.

ADMINISTRATION OF THE DIGESTIVE FERMENTS.

BY JOHN AULDE, M.D.,* PHILADELPHIA, PA.

INTRODUCTORY.—Recent years have witnessed marked changes and improvements in the methods of preparing, and in demonstrating the chemical and physiological laws governing the administration of, the digestive ferments; but, notwithstanding the liberal distribution of the literature upon the subject, there are still too many physicians who are unwilling to be guided by the directions of experimental physiologists. The object of the present paper is, therefore, to take a comprehensive view of the principles which should guide the prescriber, studying the complications which occur in the course of diseased conditions where pepsin is merely palliative or absolutely contraindicated. In many anomalous conditions, in which indigestion is or appears to be the principal factor, the superior quality of the pepsin now offered to the medical profession is such that the temptation is too strong to resist giving it a trial. If the results be temporarily satisfactory, the digestive ferments receive a share of credit; but when this is not the case, they are roundly abused by the prescriber, with the result that these products are finally stricken from his list of medicaments, when the fault is entirely his own.

By way of explanation, it may be suggested that, while laboratory tests of both pepsin and pancreatin seem to be exact, and as definite as science demands, they cannot wholly supplant the results of clinical observations. It must be admitted at the outset that scientific truths do not always represent clinical facts, but they not infrequently form the groundwork upon which clinical indications are based, hence the physician must be prepared to be influenced in his administration of these products by the complications which are presented by the gastro-intestinal tract as contrasted with the precision which can be adopted when making investigations by means of the test-tube. Some of these dif-

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ficulties may be enumerated under the following heads:

1. *The condition of the alimentary tract* may be such that pepsin alone will prove inefficient. Thus, while pepsin is the normal ferment of the human stomach, it appears to favor acetic or lactic acid fermentation, processes which are promptly arrested by the presence of free hydrochloric acid; and to show how delicate a matter this is to determine, it should be noticed that, although the contents of the stomach give the acid reaction, it furnishes no positive evidence that the viscus contains free hydrochloric acid, as it may be combined with albumoses, peptones, etc. Mention should be made here of the great stress which was laid upon the absence of free hydrochloric acid as a diagnostic of cancer of the stomach. It will be remembered that at first this was stated to be an absolute indication of gastric cancer; but later investigations showed that the acid was also absent during the progress of various diseases; and, finally, it was shown that hydrochloric acid introduced into the stomach of a patient suffering from gastric cancer quickly disappeared and could not be recovered by the usual tests. The presence of free hydrochloric acid in the stomach is an important factor in preventing fermentation, acetic and lactic, and as a complement to the peptic ferment, but it possesses little value when present in the form of *loose* combination with peptones, etc. Various theories have been advanced regarding its origin, but that now most generally accepted is that hydrochloric acid originates from the action of sodium chloride and lactic acid, formed from carbohydrates, and thus we see that a wise provision of nature prevents lactic acid fermentation. This theory is apparently confirmed by the experiments of Girard, who found that the injection of a solution of sodium chloride into the rectum not only increased the secretion of gastric juice, but the aggregate amount of hydrochloric acid in the stomach and the pepsin were likewise increased. The employment of other chlorides, however, failed to produce this effect, items to be taken into consideration when prescribing a special diet for the sick. These observations, it will be observed, lend color to the belief that too much salt taken with food has a deleterious effect, and places us in a position to appreciate the scientific basis upon which this popular notion rests. No attempt has been made as yet to take advantage of this practical fact, except perhaps in the empirical use of lactic acid in the treatment of intestinal affections of children during the summer season. The probabilities are, however, that better results would follow the use of hydrochloric acid rather than to depend upon the theoretical transformation of this substance (lactic acid).

Attention should be called to the fact that many persons partake too largely of carbohydrates, and, as a result, too much lactic acid is produced in the stomach, the normal function, the production of hydrochloric acid, is arrested; and consequently a large portion of our population are more or less constant sufferers from acidity of the stomach and fermentation of food, which seriously hinders intestinal digestion. Not infrequently it is just this intestinal dyspepsia which the physician endeavors to correct by the administration of pancreatin. The folly of the method becomes apparent when we consider how promptly relief will follow the withdrawal of starchy foods and sweets, the restriction of the patient to a meat diet, together with the judicious employment of pepsin with a small quantity of hydrochloric acid for a limited period. Of course, I am guided by theory to these conclusions, my information having been derived from the experiments of the physiologists; but, concerning the actual results obtained by the plan advocated, I speak from experience, which must be accepted as the final test. The observations of Salisbury and Cutter, although not yet confirmed by the published experience of American practitioners, must evidently be making an impression upon their practice. Pausnitz, a German author, recently made some observations upon feeding a man for several days on beans, to which was added a little fat, meal, salt, vinegar, and beer, and he found the results unfavorable, facts which were proven by Salisbury more than twenty years ago. In this connection should also be mentioned that care is necessary to avoid acetic fermentation, the presence of butyric, oxalic, and other acids, which materially hinder or arrest the action of digestive ferments.

Inasmuch as most of our patients are suffering from this acid condition of the secretions due to an improper diet, no doubt good results would attend the exclusion of all starchy foods and sweets temporarily, using large doses of sodium bicarbonate with a view to modify the condition of the secretions as quickly as possible. It is not enough, however, to order 10 grains after meals; such dallying but prolongs the misery of the pa-

tient. Nor should this substance be taken in considerable doses shortly after meals, owing to the increased work thrown upon the stomach. Generally, it will be found most useful; and the rule applies to alkalies as a whole, if the medicament be given about two hours after food is taken into the stomach, although there may occasionally be instances where more can be effected through the administration of the alkali about an hour before taking food. For the purpose of effecting any marked change, as much as 30 to 60 grains of the sodium bicarbonate, well diluted, should be taken at the times indicated. The use of hot water is also recommended, but it must be ordered with due regard to the wants of the patient and condition of the digestion.

2. *The influence of microbes* was at one time regarded as having an important action in promoting digestion, but the investigations of Harris and Tooth demonstrated that micro-organisms were unnecessary for gastric digestion. They have shown that microbes produce not true peptones, but albumoses, and they found also that trypsin also could convert proteids into peptones without the assistance of micro-organisms, so that the functions of the micro-organisms have been unduly magnified, although Abelous discovered no less than sixteen different species from the products of the washings of his own stomach. The presence of micro-organisms is not doubted, but we must bear in mind that many of these bodies are mutually antagonistic; the poisons developed by this destructive action we can only estimate, neither are we in a position to say to what extent they are responsible for symptoms of disease. Through the medium of the circulation a considerable portion of this refuse matter must be carried to the liver, where it is destroyed absolutely, but doubtless the peptic ferment, along with free hydrochloric acid, exercises an important function in the destruction of this form of poison at various stages of development.

Among many ingenious theories that have been advanced concerning the digestive ferments as factors in the production of disease should be mentioned Loewenthal's notion that the reproduction of the cholera bacillus of Koch was due to the presence of pancreatin in the intestine, and, by means of a combination of hashed pork, bean-flour, common salt, peptone, and grape-sugar, to which was added some pancreas from a hog, he apparently proved the truth of his theory. To meet this diseased condition (cholera), it was only necessary that the proper antiseptic be deposited in the habitat of the microbe,—the small intestine. The remedy was discovered in salol, but we cannot learn that it has been the means of directly lessening the ravages of Asiatic cholera, although the bacilli in the test-tube were rendered *hors de combat.* Theories of this nature must always be accepted with certain limitations, because of the complications existing in the human economy, and the results attending our efforts in overcoming disease are really surprising when we consider the array of micro-organisms, ptomaïnes, leucomaïnes, and so-called extractives with which we have to contend.

3. *Among the extraneous causes* which prevent us from obtaining expected benefits from the employment of digestive ferments may be mentioned the condition of the liver and an impoverished condition of the blood, such as we find in anæmia, chlorosis, etc. It is to the liver that we must look for assistance when dealing with a depressed state of the economy, such as may be presumed to exist when there is a demand for digestive ferments. This organ performs an important and valuable function in the elimination of poisonous material from the blood; and, in addition to its function as exemplified in the formation of bile, we should bear in mind that it acts upon peptones, and has a destructive influence upon the ptomaïnes and other poisons previously referred to. Very many alkaloidal substances are destroyed upon entering the liver besides the cadaveric alkaloids, and especially is this true of the alkaloids obtained from the Solanaceæ group.

When the functions of the liver have been deranged by the abuse of alcohol, or when they have been overpowered or suspended, as in the case of long-continued disease, like typhoid fever, the benefits to be derived from the exhibition of digestive ferments will be comparatively limited. True, the primary assimilation receives an impetus, but until the barrier presented by a diseased liver is removed, but little benefit can be expected to accrue to the secondary assimilation. The torments of indigestion may be temporarily relieved by means of artificially-prepared gastric juice, followed later by pancreatic preparations, but the body remains without its proper nourishment. A like condition obtains when a person is overfed, or when the food has been inappropriately selected, as in the case of starch and sweets previously noted, by which the functions of the intestinal tract become depressed.

Anæmia, chlorosis, and allied affections are often but the succeeding stages of the pathological changes just described, and, as a consequence, without proper attention to the liver, and an attempt to re-establish the integrity of the mucous membrane of the alimentary tract, the treatment of these affections by the exhibition of digestive ferments must be regarded as a temporary expedient, one which is not well calculated to shed lustre upon the reputation of the physician adopting the tactics. But, when these remedies are used in connection with appropriate treatment directed to the causation of the malady, the improvement will always be in proportion to the success with which the real cause is overcome, and accordingly the patient will be rewarded by the permanency of his convalescence.

4. *The mode of administration* also remains to be considered. If the statements of physicians and the observations of druggists are to be credited, there is reason to believe that great laxity exists concerning the combinations which are proper and suitable when exhibiting pepsin and pancreatin. Many physicians, while recognizing the immediate benefit to be derived from these products when introduced into the stomach, also take cognizance of the true conditions just pointed out, and endeavor by means of combinations to secure alleviation of the effect and removal of the cause at the same time and by the same agent. Theoretically this is a *desideratum*, but practically it is a failure, owing to the incompatibility which exists between these physiological remedies and other preparations of the materia medica. With a view to bring this subject more forcibly to the attention of the reader, the following formulæ have been prepared, showing some of the incompatible and unphysiological combinations that are not infrequently ordered by physicians who are anxious for the recovery of their patients. As little space has been taken up as possible in criticism, but it is believed sufficient has been said to stimulate investigation, which will eventuate in the investigator arriving at the same conclusions as the writer. Take the following:

℞ Pepsini puri, gr. xxx;
Sodii bicarbonas, ʒii;
Glycerini, fʒiv;
Tr. cinchonæ comp., q.s. ad fʒiii. M.
Sig.—Take one teaspoonful in water after meals.

Those who believe the foregoing combination to be an efficient remedy for indigestion, on account of its containing one and one-fourth grains of pure pepsin to each dose, will, we fear, be greatly disappointed, as Dr. Winslow has positively determined that a very small proportion of alkali added to a solution of pepsin permanently destroys its activity, and that it cannot be regenerated by the addition of an acid. But this is not the only objection to the combination in respect to the contained pepsin; the presence of tannin in the compound tincture of cinchona will destroy a considerable quantity, if not all, of the pepsin in this mixture. Again, it must be borne in mind that this preparation is alcoholic, and alcoholic solutions of twenty per cent. or over act very quickly, causing the deterioration of pepsin. And still, no doubt, physicians will insist that a mixture of this character has produced good results in their experience, a fact which is readily admitted; but, at the same time, it is not admitted that the good results have been achieved by the presence of pepsin, but to the other ingredients. A mixture of this nature will show that it possesses no digestive activity in the test-tube.

Take another formula, in which the two products are combined like the following:

℞ Tr. capsici, gtt. xvi;
Vini pepsini,
Liq. pancreatin, ää q.s. ad fʒii. M.
Sig.—Take one teaspoonful in water three times daily.

The above formula is defective in several respects,—first, because it contains both preparations in a liquid form, which, as is well known, permits immediate and prolonged action, when the most powerful ferment will destroy the less active unless the quantity and reactions interfere. In this particular case the evidence is sufficient to determine in favor of the supremacy of the pancreatin, because a wine of pepsin often has practically no pepsin in it; this we may call the second and third defects. In the preparation of a wine of pepsin, the wine should first be detannated in order not to affect the peptic ferment. An alcoholic preparation of pepsin that is permanent is not impossible, but to retain its activity the ratio must be less than twenty per cent. of alcohol. Dr. Bardet has undertaken a number of experiments to determine the solubility of pepsin in alcohol and the influence upon its physiological action. It was found that ninety-five per cent. alcohol precipitated the greater part, and that in a fifty per cent. solution the pepsin was about as soluble as in water. With a good

quality of pepsin it was found that the pepsin was unimpaired in a twenty per cent. solution, but when the strength of the alcohol is increased from twenty-five to seventy per cent., the value of the pepsin proportionally decreases. Lastly, this prescription is too indefinite, no time being given for its digestion.

If the question as to the advisability of giving both pepsin and pancreatin in the liquid form at the same time presented, I could not say that such a course would be impracticable or unphysiological, as I am disposed to believe that both may produce salutary effects when introduced into the stomach at once. The reservation is made that they cannot be made up together and allowed to remain indefinitely in contact, but should be mixed at the time of taking. This exception would not hold in the case of using the two products in the form of a dry powder, as until moisture is present fermentation is postponed. When the two are combined, the most appropriate time for exhibition is during or just after taking food,—points to be defined in connection with the discussion of the respective ferments, the method and time of their exhibition. (See SUMMARY.)

The annexed formula is presented because it is intended to act as an antiseptic, and contains mercuric bichloride, one-thirty-second of a grain to each dose, along with one and one-half grains of powdered pepsin:

℞ Pulv. pepsini, gr. xxiv;
Acidi hydrochlorici dil., f℥ii;
Hydrarg. bichloridi, gr. ss;
Alcoholis,
Tr. ferri chloridi, āā q.s. ad f℥iii. M.
Sig.—Take one teaspoonful in water after meals.

The careful observer will readily perceive that this formula is what might be termed a "shot-gun prescription." It is actually a double-header,—two prescriptions in one. But while it may be a useful combination and stimulate digestion, owing to the presence of the antiseptic,—mercuric chloride,—and act as a hæmatinic, owing to the presence of iron, it is in no sense an aid to digestion because of the contained pepsin. The peptic ferment will be destroyed long before it reaches the stomach by the mercury, by the alcohol, or by the tincture of the chloride of iron. The better plan would be to combine the pepsin with the acid, and give it with a little water and glycerin about half an hour after meals; the other three ingredients might be combined with advantage, and given an hour later than the pepsin-acid mixture.

The ingredients of the following preparation are but too familiar to the critical eye of the scientific physician, but the laity still partake with a relish (?) and seem to enjoy the delusion. It may be accepted as a modified elixir and purely a humbug, in respect to its digestive properties.

℞ Pepsini puri, gr. xxiv;
Bismuthi subcarb.,
Pulv. carb. ligni, āā gr. xxxii;
Elix. aurantii, f℥ii. M.
Sig.—Take one teaspoonful in water after meals. (Shake.)

The contraindications for the employment of alcohol in the percentage contained in the simple elixir of orange need not be again described, as it will be seen at a glance that the peptic ferment is promptly destroyed. Whatever good results from the use of this combination will be mainly due to the bismuth and the charcoal it contains. If the elixir was eliminated, and the pepsin, bismuth, and charcoal all given in the form of a dry powder, a useful combination would be afforded. Neither the bismuth nor the charcoal retard the activity of the pepsin, and the latter, by absorbing offensive gases, might, in fact, favor the activity. To the student who keeps up with the activities of the progressive age these criticisms will have but little significance, but to those who have been standing still for the past few years the recapitulation of the foregoing formulæ will prove a revelation; and it is sincerely to be hoped that at least a limited number may find it advantageous to combine their digestive ferments in accordance with the views here advanced.

5. *Inferior preparations* must be regarded as a factor which seriously interferes with the successful employment of digestive ferments, but in this case it will be sufficient to refer the reader to the elaborate study of Professor Chittenden, of Yale, who, after giving this subject careful attention in the way of comparative laboratory tests, announced his conclusions as follows: "As a final result, then, we may consider the true proteolytic power of the above ferments, compared with the one of highest digestive power, to be as follows:

	"Relative proteolytic action.
"1. Parke, Davis & Co.'s pepsinum purum in lamellis	100
2. Fairchild's pepsin in scale	52
3. Scheffer's dry pepsin, concentrated	48
4. Jensen's cry-tal pepsin	35
5. Ford's pepsin in scales	32
6. North's pure pepsin	16
7. Boudault's pepsin	14
8. Royal Chemical Company's pure pepsin	9

"In considering these results," Professor Chittenden also adds, "it is to be borne in mind that the same brand of pepsin is liable to slight variations in its digestive power, doubtless dependent in part upon the condition of the membranes from which it is prepared." This leads to the suggestion that it would be advisable to have these products examined from time to time, with a view to determine their activity,—a simple process, which can readily be carried out by any practitioner of ordinary ability. Most physicians are acquainted with the requirements for a good pepsin, hence it will be unnecessary to enter upon a discussion of this question at the present time; but, from what has been said, it will be evident that those who condemn the use of digestive ferments, after a perusal of the foregoing remarks, will have no excuse for so doing on the assumption that they are inactive or lacking in proteolytic or amyolytic properties.

Summary.—In concluding this somewhat imperfect sketch of the methods to be followed in the employment of the digestive ferments, as viewed from the stand-point of the clinician, it may be well to recapitulate, in the form of a summary, some of the more practical points which have been brought forward.

When describing the conditions of the alimentary tract which interfere with the processes of artificial digestion, I have referred to the tendency towards acetic and lactic acid fermentations, together with the influence which hydrochloric acid has upon these pathological or functional derangements; and have noted also the supposed origin of this acid along with the metamorphosis which is supposed to follow the free use of common salt as an article of diet. The disadvantages of a too free use of carbohydrates as a dietary have also been noted, and it is desired here to further emphasize the fact that these substances especially hinder intestinal digestion. Knowing that a large portion of our population subsist chiefly from day to day upon a diet principally composed of carbohydrates, we can appreciate the relief furnished by purgatives in the case of minor ailments, by which means the intestinal tract is temporarily relieved of its burden. The benefits to be derived from the free use of alkalies and the judicious employment of hot water have likewise been mentioned, when, it is but reasonable to assume, the digestive ferments will afford the most pronounced evidences of their utility.

With a view to supply further light upon this occult subject, the theory, now exploded, that microbes co-operate with the normal ferments of the stomach in promoting digestion has also received attention.

The extraneous causes which prevent us from obtaining the desired effects, as regards the condition of the liver and the impoverishment of the blood from various causes, have also been pointed out, in order that those who assume that these remedies ought to accomplish miracles will be compelled hereafter to estimate the demand by considering the subject in its different bearings.

The faulty methods of administration have, it is believed, received due consideration; but, as a complement to that which precedes on this topic, a few words may be added relating to the rules for prescribing both pepsin and pancreatin. Pepsin acts only in acid medium, and should not be given with an alkali, because the ferment is thus destroyed, and cannot be regenerated by the addition of an acid. If doubts exist, therefore, as to the presence of free hydrochloric acid in the stomach, that substance should be combined with the pepsin. The peptic ferment having been once properly started, it will continue to act indefinitely, providing the peptones are removed and the contents of the stomach kept acid, and it may be advisable to add small quantities of the acid from time to time in the hope that gastric digestion will thus be favored.

The most appropriate time for the administration of pepsin, when given alone, is immediately after taking food; when combined with an acid, the administration may be advantageously delayed for half or three-quarters of an hour, in order to afford a favorable period for the salivary secretion to act upon the starchy portion of the food and stimulate the secretion of the normal gastric juice.

Pancreatin should be given during the early portion of the meal, with or without a simple bitter free from tannin, or it should be administered about two or two and a half hours after, when the contents of the stomach are supposed to be neutral in reaction. Containing an active proteolytic ferment,—trypsin,—this product acts readily upon proteids and upon amylaceous materials, and will be found to produce remarkably favorable effects, especially when dealing with indigestions due to derangements of the intestinal tract. Both pepsin and pancreatin may safely be given in the form of powder combined; but, in the liquid form, when allowed

to remain in contact, their activities are decidedly lessened. Occasionally pancreatin may be combined with alkalies, but as it is an extremely delicate substance, more certainty will attend its use when given alone, preceded or followed at an interval of half an hour by the proper alkali.

The necessity for care in the selection of these products is so well demonstrated by the results of Professor Chittenden's investigations that I cannot do better than refer the reader to his conclusions as recorded on another page.

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WATER AS A THERAPEUTIC AGENT.

By W. E. Scott, M.D.,* Ontario, Cal.

TROUBLET has truthfully written, "To select well among old things is almost equivalent to inventing new ones."

There is a tendency among physicians, which is encouraged by those who are financially benefited by the change, to transfer their affections from the older friends of the practitioner to pretty young aspirants for esteem in the form of new therapeutic agents. So, frequently have these *débutants* come into popularity like shooting stars, and passed into obscurity with the suddenness of a discharged Roman candle.

I would not be considered as opposed to progress and improvement in any form or place. I realize the advantages which have been gained by many happy changes in the methods of the past. I believe it to be every physician's duty to give his patients the advantage of any and all the remedial agencies which have been demonstrated; to be, in other words, an eclectic in the true sense of the word.

Queer changes have taken place in the practice of medicine, within the limits of my own observation, in the use and doses of many common remedies. These changes have been due to the light of experience and the partial overthrow of what might be termed the ruttism of the past.

I have seen the heroic doses of our forefathers in medicine, among those of the regular school, reduced in many cases to a fraction of their former quantity. I have observed the delusion of high potencies, which was the chief attraction of homœopathy, to so fade into comparative obscurity, as indicated by the practice of their representatives in their ordinary prescriptions, that serious fears have been entertained that they were rapidly gravitating to the opposite extreme.

The plausible recommendations which are frequently given to new therapeutic agents by medical literature, by circulars, and by the encomiums of the public press, have a strong tendency to divert the attention of the average practitioner from other methods of treatment, which have more claim on our profession than usage by its members would indicate.

Comparatively too much time is spent in prospecting for the philosopher's stone, which is to transform disease into health by means of drugs alone, and too little to the opening up of discovered claims, which only need development to unfold a world of wealth.

I refer especially to the use of water as a therapeutic agent.

Even compared with the most brilliant discoveries of this enlightened age, I consider water as the most important and valuable remedial agent in use.

If this Society think, as chairman of the Committee on Materia Medica and Therapeutics, I would have shown better judgment in bringing to your notice some subject with which you are less familiar, I will remind you that a president of the American Medical Association read a paper before a national gathering of medical men on "How to Prepare a Poultice, and its Uses."

The subject chosen so far transcends the one referred to that I hope to be pardoned for introducing a topic with which so many are familiar and concerning which so few are informed.

From earliest ancient historians we learn that water has not only been used for drink and purposes of cleanliness, but for the distinct purpose of healing disease. The writings of Job, Jacob, Homer, and other ancients all praise its healing virtues. Primitive tribes in many lands, centuries and ages before the introduction of modern pharmacy, used water in different forms in combating disease, with which the race has probably been afflicted soon after the creation. The Hindoos plunged their sick into the sacred waters of the Ganges, the laws of Moses demanded baths of purification, and those of Mohammed prescribed similar rules. Thus, it will be seen, that in early days its use was even associated with religious rites. When we realize that in

* Chairman of Committee on Materia Medica and Therapeutics; First Vice-President of the Southern California Medical Society.

early ages knowledge was largely confined to the priests and clergy, this fact does not detract from the importance of the precedent. In the Middle Ages the Greeks, Egyptians, Gauls, and Romans each had luxurious public and private baths. Those of Caracalla are said to have had sixteen hundred seats, capable of seating three thousand people, while those of Diocletian were so extensive that forty thousand soldiers were employed in their construction.

Alexandria, in Egypt, at the time of its destruction, had four thousand baths, similar to those in use by the Romans, and had not its magnificent library been cremated our literature on this subject would undoubtedly have been enriched by many volumes representing the knowledge and uses of water during those ages.

From the days of Hippocrates, who advocated the use of water as a remedial agent in pneumonia, inflamed joints, rheumatism, spasms, fractures, and dislocations, to the days of Priessnitz, the German peasant, who, by his discriminating and intelligent use of water in the treatment of disease, commanded the attention of the civilized world, and gave to the subject an impetus which led to extensive investigation by members of the medical profession, progressive physicians in all ages have utilized its healing virtues to a varying extent. Galen, Celsus, Hoffman, Guianani, Fleury, Haller, Currie, and other leading medical men in the age in which they lived have left memorials in its praise.

At the present day, on the continent of Europe and in America, there is not a city, of any considerable size, which has not one or more establishments, where, under the management of physicians, disease in various forms is treated by hygienic measures, with water as the sole remedial agent.

Hundreds of springs are celebrated throughout our land as possessing peculiar curative properties for a large number of diseases. I do not believe all the good results obtained at these places are solely due to the use of their water, neither do I believe that many possess peculiar virtues which may not be obtained at home under the management of one who is sufficiently conversant with the value of this agent and understands its mode of application.

The relaxation from business or home cares, the changes of climate, diet, and scenery, and the free use of water, in ways which had been neglected even as a cleansing agency at home, have materially contributed to the results produced. There is no special reason why the average physician cannot in his daily practice derive the beneficial results of these water-cures. He has the advantage to be gained from the use of all those medicinal agents which confirmed hydropathists from principle eschew, because they are so bigoted as not to recognize any virtue in medicine: he is placed at a disadvantage in not possessing the facilities of treatment used by such institutions, his patients are not directly under his immediate supervision, and do not derive the benefits due to a journey with its changes of scenery. Physiologists teach that the great bulk—even of the more solid constituents—of the human body is composed of water.

It is practically the fluid through which nourishment is conveyed to all parts of the system. It is the medium through which effete matters largely are carried to the several organs of excretion for elimination.

In its pure state it is the universal solvent for the elementary constituents of the body.

If we realize these statements to be true, we cannot help believing that this substance is the most important one in the animal economy. In one form of its application for the cure of disease there is an experiment which has probably been illustrated to some of you in studying the subject of endosmosis and exosmosis.

A glass tube, in which is placed a strong solution of salt or other soluble mineral, is half filled. A gold-beater's skin then covers this solution, and the tube is filled with pure water. After a certain length of time the two fluids will be found to be identical. The mineral solution will penetrate this animal skin in the same proportion as the pure water does, until a like solution is found on either side.

This same principle can be applied to the human skin, and thus abstract the effete matters and diseased products with which it is frequently obstructing the millions of pores of this organ of excretion.

But a small percentage of the people are conversant with and apply the simple rules of ordinary bathing, and but few medical men give this subject a fraction of the attention which its merit would command were the results more widely known and its *modus operandi* better understood.

In the different forms in which its virtues can be utilized it has various actions. In one form it is one of the most powerful astringents, and again it is a powerful relaxing

agent. It can be made at will, as by a magician's wand, to act as an emetic, laxative, diaphoretic, diuretic, alterative, tonic, refrigerant, antiphlogistic, stimulant, sedative, and antithermic. No drug, or combination of them, is so extensive in its range of application, or so certain in the desired effect. It can be administered in such mild and pleasant forms as to excite the jealousy of the high potency disciples of Hahnemann, or in forms so drastic as to command the admiration of the most radical of the followers of Hippocrates, with all of the more desirable intermediate gradations.

There are four reasons why the administration of this remedy is not resorted to more in accordance with its virtues:

First.—It involves too much trouble on the part of the patient, the nurse, and ofttimes the physician. It is so much easier to write a prescription or to order an ordinary potion.

Second.—There are but few physicians among those of the regular school, the eclectics, or homœopaths who have had the opportunity or inclination to give the subject that degree of attention which is required to obtain the results possible under other circumstances.

Third.—So much has been expected from the use of the new antipyretics—antipyrin, antifebrin, phenacetin, and similar preparations which are easy of administration—that it has been hoped that some safe and effective drug had been discovered which would replace the use of water in at least one of its several functions. It must not be forgotten, however, that some of the most experienced observers have boldly uttered their opinions that while these new agencies were a success in reducing high temperature, they did not in any other way modify the gravity of the disease with which the fever was associated.

Fourth.—It has been demonstrated strikingly in the principle of vaccination, and on numerous other occasions, that physicians are not prone to change fixed views on medical topics after reaching the age of forty. Younger men are apt to be largely influenced by their elders, and this is a chronic source of obstruction to any change which tends so strongly towards a revolution in the entire practice of medicine. Lastly, there is a prejudice against a mode of treatment which has been adopted as the sole principle of a distinct school of physicians.

The principles which are involved in a conservative application of the ideas embodied in this paper are gradually assuming a proper place among progressive physicians to which they are by their merits entitled.

Soon after becoming interested in this subject, in 1882, I commenced an investigation into the habits of cleanliness among a certain class of my patients, and was surprised to learn the extent to which some can go in violating the injunction that cleanliness is akin to godliness. One case in particular is recalled to mind. A man who lived in the northern border of the adjoining State of Arkansas consulted me in regard to his ailments. After a careful examination into the particular trouble for which he sought advice, I made bold to ask him how long it had been since he had a bath. He looked at me attentively for a moment, then said, "A bath, doc.! Do you mean wet all over?" I replied in the affirmative. He scratched his matted, silvery locks for a moment, then said, "Well, doc., if that is what you are meaning, I have not been wet all over since sixty-three." Twenty years is a long time between baths, yet I suspect the cause of his getting wet all over at that time was due to some scrape during the war, in which it was purely involuntary.

The diseases to which water is applicable as a remedial agent in one or more forms embraces almost the entire nomenclature of practice. Dujardin-Beaumetz, one of the most eminent of modern medical writers and practitioners, who, while not an enthusiast, is an ardent admirer of its healing virtues, considers organic heart-disease as the one affection where its active use as ordinarily practised is contraindicated. In fevers of all kinds, diabetes and other kidney-diseases, congestions and inflammations, small-pox, scarlet fever and other acute eruptive diseases, indigestion, constipation, nervous diseases, especially neurasthenia, hysteria, and melancholia, skin-diseases generally, gout, obesity, diseases peculiar to women, are some of the diseases where its effects are gratifying. In the practice of midwifery it is one of the greatest boons such women ever experienced. I say this with a due knowledge of the great benefits to be derived from anæsthetics. Properly managed, it removes from confinement its terrors to a great extent, and is more than a substitute for the most improved form of instruments in a very large per cent. of the cases in which they are commonly used.

Jacquez, of Lure, in his statistical researches on treatment of typhoid fever, pub-

lished in the French *Archives of Medicine* in 1847, reported that for fifteen years he had followed a treatment which consisted exclusively of the use of water externally and internally, having had under his care during this period three hundred and fifteen cases, with a loss of only nineteen lives, or a fraction over six per cent.

Sokolowski, a Russian physician, in a paper published in a French medical journal,—the *Bulletin of Therapeutics*,—in 1877, gave some statistics showing the results from a water treatment in cases of consumption, which will be interesting in a country which is a Mecca for so many of these cases. Of one hundred and six cases, sixty were in the first stage, twenty-nine were marked, and seventeen were advanced. After six months of treatment, thirty-nine were cured, thirty-four showed marked improvement, nineteen were ameliorated, seven showed no results, three were made worse, and four died.

I will relate the effects of one form of this treatment in a single case which occurred in my own experience, which may prove a beacon-light to some one who has occasion to test its merits. It was one of Bright's disease, with uræmic poisoning, in a young man about 30 years of age. Three leading physicians, in a city of twenty thousand people, who had been in attendance, had passed their opinions that he could not live longer than a few days at the most. I saw the case at this time, when it was practically abandoned, and prescribed a series of packs and baths. This was done on the principle that one organ of excretion can be made to assume a portion of the burdens which are ordinarily performed by another. In about one week the patient was out of danger, and in three he was able to travel about six hundred miles to his old home in another State.

The variety of methods in which this remedy can be used, with their various modifications, are almost as numerous as the list of diseases to which they are applicable. The more common forms for external use are douches, ordinary and partial, medicated- and sponge-baths, wet sheet-packs, wet cloths, rubber tubes for irrigating, mud-, vapor-, Turkish, and Russian baths.

The amount of excretion which can be removed from the pores of the skin of an average *cleanly* person by some of these methods is astonishing to one who has never witnessed the operation. When used on a person who is afflicted with some diseases, or who is uncleanly in his habits, the result is simply disgusting.

The choice of the method to be used, and the temperature of the water in its application as a curative agent, will depend on the nature and gravity of the disease, the material available, and the effect desired. Injury can as easily be done in the use of this remedy injudiciously, as with other valuable therapeutic agencies.

Delmas, in his "Manual of Hydrotherapeutics," published in Paris in 1883, has prepared a thermometric table in which the gradations of temperature are very minutely arranged:

Excessively cold	30.0°	to 42.8° F.
Very cold	44.6°	to 59.0° F.
Cold	51.8°	to 60.0° F.
Moderately cold	60.8°	to 68.0° F.
Slightly cool	69 8°	to 77 0° F.
Tepid	78.8°	to 86.0° F.
Warm	87.8°	to 95.0° F.
Very warm	96.8°	to 104.0° F.
Excessively warm	105.8°	to 158 0° F.

THE ETIOLOGY OF CHOLERA INFANTUM, AND ITS TREATMENT BY ZINC AND SODIUM SULPHO-CARBOLATE.

By Leonard G. Broughton, M.D., Reidsville, N. C.*

IN beginning this paper it is scarcely necessary for me to state that from cholera infantum a greater mortality results than from any other class of diseases to which children are susceptible, for the awful experience of too many mothers attests the truthfulness of such a statement. The cause for this fearful and alarming fact, however, is not generally known by the public. Is it not a fact that in too many, yea, in the vast majority of instances, death results from a want of interest and knowledge on the part of the attending physician? Is it a fact, too, that in matters of disease and health, the great, generous public impose too much confidence in the physician for his merit? If this deficient knowledge on the part of our profession was the result of imperfect teaching or imperfect science, we might claim an excuse, but, in the main, such is not the case.

What, then, can be the cause? A few words will state it,—absolute indolence. This is the key that unlocks the cause of so much trouble, not only on this line but many others. If, then, as a result of indolence, we allow our little patients to sicken

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and die, what feelings of remorse will we have when we reflect over our past experience?

Too many of our most sensible practitioners belong to the class of "non-investigators." They may, too, be denominated "kickers." They kick when the new theories are brought out by men who do think. They denounce germs and bacteria, and modern asepsis and antisepsis. Why? Simply because they do not wish to investigate them, and learn the principles deducted from them.

I once had a college professor who taught that HO was the formula for water, and SO_3 the formula for sulphuric acid. He was called one of the smartest men in North Carolina, and he was, but he had not investigated modern chemistry, and learned that grand system,—*valence*. If so, he would have known that the univalent H would not combine with the bivalent O, only in multiples; and also he would have known that all acids were salts of hydrogen; and hence sulphuric acid should have been H_2SO_4. I mention this to show that the one trouble with our bright men, so called, in all professions is the trouble of indolence and many times prejudice. But is it not more evident in this our grand profession than in any other? And now and then, when a young man tries to acquaint himself with modern discoveries, and, when once acquainted, becomes convinced and adopts these truths, he is called "*smart*," in a sarcastic manner. And hence, instead of an impetus being given to those who would investigate, the opposite is the case.'

But I was intending to write on cholera infantum, and I must ask pardon for my digression, for I feel that it is in this line that this thing of indolence is most manifest. How many physicians are acquainted with the recent discoveries concerning this disease? How many treat a case without ever examining the stools or taking the temperature? How many know that an odorous stool means an albuminous fermentation, and an odorless stool means a carbohydrate fermentation, and that each requires a different *régime*? Now, what I want to do is to point out some causes, not original, for this disease, and then deduct some principles regarding their treatment, and mention some remedies of most service to me in the management of them.

In the first place, I wish to state that *abnormal fermentation* of food-stuffs is the primal cause of this disease; and, second, I wish to say that that *régime* that will most successfully counteract that condition will quickest alleviate our patients.

Now, let us call in some of the modern investigators on this first proposition. Vaughan, who has had extensive experience, says, "In cholera infantum the germ is *pathogenic;* a definite chemical poison; the factor which is operative in these cases is to be found in the food; the changes which take place occur either before or after being taken, in either case the result of micro-organisms." Baruch: "It is due chiefly, though not solely, to the multiplication of micro-organisms, generated in the gastro-intestinal tract as a result of indigestion; conditions analogous to wounds, to which septic material has had access." Rachford holds "that the chief, if not the *only* cause, of this trouble, is abnormal intestinal indigestion and fermentation of food-stuffs." Baginsky argues: "Indigestion and decomposition is the cause of this trouble, as of all the diarrhœal disorders; the way in which abnormal fermentative changes take place in the normal bacterium aceticum (lactis aerogenes of Escherich) hinders the growth of pathogenic germs. If the normal fermentation exceeds a certain point, the bacterium aceticum is itself destroyed, and the excess of acetic acid interferes with the action of the pancreatic and biliary secretions, and acts itself as an irritant. If, then, the fermentative process goes on further, we have gases, methane, etc., formed, which lead to catarrhal changes, etc., in the mucous tract. These conditions open the way for numbers of bacteria, which find their way into the tract, and, as a consequence, an alkaline fermentation, etc." And so the witnesses testify as to fermentation being primarily the cause of this trouble. I might give more, but these suffice.

Some few years ago Dr. William F. Waugh, of Philadelphia, Pa., wrote on this line, giving a very clear explanation of its cause, and he was the first to open my eyes and put me to investigating. He took the ground that it was caused by indigestion and decomposition; and that the germ was *entirely* local, and was developed in the bowel; and that the intense cerebral symptoms we so much dread were only the results of the absorption of the products of germ action.

Now, let us bring our own experience to bear upon the subject. In the last few years I have taken much interest along this line, and in every case I have taken great pains to go back in my inquiries to a few days be-

fore the child was taken *so ill*, and in *every* case I have been able to find evidences of indigestion; and the severe seizure has only been the grand culmination of these pre-existing troubles.

And just here let me say that, as I take it, a child need not be passing great quantities of serous matter, of a rice-water character, to have cholera infantum. True, it may not be *genuine* cholera infantum, but shades of it or degrees of it.

Without saying more on the line of cause, let us come to our rational deductions. We stated that our second proposition was that that *règime* which would most successfully counteract these conditions would evidently be most successful in the treatment of this trouble.

Now, then, what is that *règime*, and how shall it be put into practice? First, by proper attention to diet; and, second, by properly-selected remedies. Before taking up diet, let us presume we are treating a milder case; not one of those severe seizures that result so quickly in collapse and death, but a case in which there are several fluid discharges daily, with fever, thirst, etc. Here is when we can do most good. Let us first examine stools as to color, consistency, and odor. We find them most frequently of a dark yellow, thin, and watery, sometimes odorous and sometimes odorless. If odorous, we know that we have a case of albuminous fermentation, and a carbohydrated food is indicated. What shall it be,—milk? No; for milk is albuminous and carbohydrate also. What, then? Thin starch-water is good, or wine-whey is better, the albuminous part of the milk being extracted by the wine, and the carbohydrate alone remaining, and this also serves as a stimulant as well as a food. A food of this kind is usually sufficient till the troubles can be overcome. If other food should become necessary, hard crackers soaked in warm, sweet water do well, etc. If, on the other hand, the discharges be *odorless*, we have to deal with carbohydrate fermentation, when an albuminous food must be given. Milk, in this case, will not do, for it contains carbohydrate. Neither can we use whey. So, then, milk will not do for any form. Egg albumen given now will act well here, given largely diluted with water; also the different vegetable broths, as they contain vegetable albumen. I might say more on this line, but this suffices to show my point. But, before proceeding to the consideration of drugs, let me say a word as to the important part played by heat in the production of these troubles, to say nothing of its influence over food fermentation, etc., and over the nerve-centres. It has the effect of lessening the quantity of oxygen in the blood, and hence the waste products are allowed to accumulate, and by their presence vitiate the system, and render it susceptible of germs and poisonous ptomaïnes; and, hence, to overcome this, is a matter entitled to consideration. Keep the child cool; use freely the cold sponge-bath.

Now we come to the consideration of remedies that are specific, not that they overcome every case, but specific in that they overcome, in the main, those specific causes which produce this trouble. I have found nothing equal to the sulpho-carbolate of sodium and zinc. These combinations are formed by the addition of sulpho-carbolic acid with the appropriate base. Sulpho-carbolic acid is produced when sulphuric and carbolic acids are added together. It is also known in pharmacy under the name of *orthophenol-sulphonic acid*. So much for its pharmacology.

How should these salts be used? Of course, they differ only with regard to the base. Therefore, when an astringent antiseptic is specially desired, the zinc salt is preferable; but if, on the other hand, we are only wanting a remedy for the prevention of fermentation and an antiseptic, the sodium compound is the better.

Now, there are some additions that can be made to our prescriptions that will materially assist our remedy to do its work. For instance, the primal trouble being indigestion and faulty appropriation, we can very sensibly combine some pepsin compound; also the addition of pancreatin is well. I am in the habit of using, in mild cases, upon my first visit, something like the following, to a child from 1 to 2 years:

℞ Hyd. chl. mitis, gr. i;
Sodii sulpho-carb., gr. xx;
Sach. pepsin. (P., D. & Co.), gr. xix. M.
Div. in ch. no. x.
Sig.—One every three hours.

If there is much irritation about the stomach, I use a quarter of a grain of zinc sulphocarbolate and three grains of bismuth salicylate to each dose, instead of the sodium. If the case be *very* severe, and there is danger of immediate death, the discharges *very* profuse and watery, I usually use something like the following:

℞ Bismuthi salicylatis, ʒii;
Zinci sulpho-carb., gr. iv;
Mist. cretæ, ℥i;
Tr. opii comp.,
Aquæ, aa ℥ss. M.
Sig.—ʒi every two hours till bowels are controlled.

Then I cease the use of this recipe, and write for one like the first, using either the sodium and zinc salt, as the stomach is irritable or not, or an astringent is indicated or not.

A very convenient way of administering it to a case of lienteric diarrhœa, which is only the initial step to cholera infantum, is in the following manner:

℞ Zinci sulpho-carb., gr. vi;
Elix. lact. pep. cum bismuthi, ℥iii. M.
Sig.—ʒi every two hours, or give it in tablet triturate form.

I had Messrs. Parke, Davis & Co. to make for my druggists a lot of tab. trit. of zinci sulpho-carb., containing a quarter of a grain each, with one grain of their excellent pepsin. I use these a great deal, and like the mode of administration. When I have more made I shall use also one grain of their pure pancreatin added to each tablet. There is one other beneficial feature of this combination. The zinc has an undoubted influence over the nerve-centres, and, like arsenite of copper, accomplished *wonders* in a short time. I am confident that when the new therapeutic school, with Dr. Aulde at its head (for he deserves to be there), will be established, this drug will be put along in the line of the new remedies, acting through new channels that are not now understood.

Now, in conclusion, let me say, I have not tried to cover *all* the ground, nor to do justice even to this drug, but I hope by it to call the attention of the public to this important remedy, and to some plain facts regarding the cause of this dreaded disease, with the hope that good may come from my feeble effort.

HYDROXYLAMINE.

In 1865 Lossen first succeeded in preparing hydroxylamine, while its toxic properties were shortly thereafter studied by Binz.

Hydroxylamine readily forms salts, with acids, with the exception of carbonic acid, and these salts, in contact with the bicarbonate and the biphosphate of sodium met with in the organism, decompose in the presence of halogens, iodine, bromine, and chlorine, in water forming acids.

The most important salt of hydroxylamine is the chloride, which, nevertheless, contains free hydrochloric acid, iron, chlorides of barium and ammonium. It is a powerful reducing agent, and, introduced into the blood, it forms methæmoglobin and causes hæmoglobinuria. It also acts as a narcotic, perhaps due to its formation of nitrous oxide in the blood.

Eickhoff has utilized its reducing powers in parasitic skin-diseases, employing with success a formula composed of 1 part of the hydrochlorate of hydroxylamine to 500 each of alcohol and glycerin. He first employed this as an external lotion in five cases of lupus, five cases of herpes tonsurans, and one case of parasitic sycosis. The affected parts should first be washed with soap, and then bathed with this mixture three to five times a day. On account of the toxic and irritating properties of the remedy, it should not be employed in any stronger solution than that mentioned above. In one case of herpes tonsurans its employment produced eczema of the hairy scalp, but the cure was not on that account at all delayed. Eickhoff believes that good results may be obtained from the use of this remedy in psoriasis, parasitic eczema, and he even advocates the employment of subcutaneous injections of hydroxylamine in leprosy.

In twenty-four cases of psoriasis, Fabry, at the clinic of Doutrelepont, has found the action of hydroxylamine similar to that of chrysarobin and pyrogallic acid, with the further advantage that it does not stain the clothing. Its poisonous properties, however, necessitate considerable caution in its use, and he refers to one case in which he employed a one per mille solution of hydroxylamine in psoriasis of the knee, where its use was followed by marked albuminuria; also symptoms of local irritation are by no means rare when even fairly weak solutions are employed. Fabry advises that solutions of hydroxylamine should be neutralized by the carbonate of lime, as in that way part of the irritating properties will be removed.

Blaschko recommends instead of alcoholic solutions an ointment of one or two per cent. hydroxylamine with lanolin. He claims that this ointment causes no pain, and is equally efficacious, and is less apt to produce symptoms of poisoning.—*La Médecine Moderne*, September 18, 1890.

The Therapeutic Gazette

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Medical Publisher, Box 470,
DETROIT, MICH.

Philadelphia, 714 Filbert Street.

SUBSCRIPTION RATES FOR 1890.

(Journal increased to 72 pages each month.)

THERAPEUTIC GAZETTE (postage included).....$2.00
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Price to Foreign Subscribers direct (postage included), $2.50 (10 shillings). English postage stamps received on remittances.

Editorial communications should be addressed 332 South Twenty-first Street, Philadelphia. Articles intended for the Original Department of the GAZETTE will be accepted only with the understanding that they are contributed to it exclusively.

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Leading Articles.

THE OLD AND NEW HYPNOTICS.

OPIUM is the most ancient and still the most universally employed hypnotic. The narcotic property of opium is the result of its morphine, codeine, papaverine, and cryptopine, all somniferous alkaloids. Opium is far from being a pure hypnotic ; in small doses its action is that of an excitant of the cerebrum, and generally it is only in tolerably large doses that it is hypnotic. Many persons find opium, and especially morphine, powerful promoters of wakefulness, sleep only following many hours after the ingestion of the narcotic. Opium is *par excellence* the hypnotic where the insomnia is due to pain. Opium undoubtedly exerts its power by a stupefying action on the cortical cells, rather than by any changes which it may effect in the circulation. "It is the peculiar virtue of narcotics," says Stillé, "to blunt the senses and steep the mind in forgetfulness, in spite of pain, of nervous irritability, or of tormenting thoughts."

Other narcotics—*belladonna, hyoscyamus, Indian hemp, stramonium*—have but feeble hypnotic power. They are not absolutely devoid of this power, as some writers (Headland, Tully, etc.) have affirmed, but they are not to be depended on. Lettuce and hops possess true hypnotic virtues, with mildly stupefying properties, and do not produce any arterial or cerebral excitement or delirium, any subsequent paralysis of nervous or muscular function like other narcotic agents, and particularly opium and belladonna ; they act in this respect more like chloral and paraldehyde than like opium, engendering a calm, which soon passes into natural sleep.

Alcohol sometimes acts as a hypnotic, and is, in fact, frequently resorted to for that purpose. It produces sleep not because it is a vascular stimulant, clearing the overdistended blood-vessels, but because it is taken in a sufficient dose to have a narcotic effect. Ale is especially chosen for hypnotic effect ; the hops with which it is impregnated undoubtedly aid the calmative action. Whiskey or brandy to have a soporific effect should be of pure quality, and the older the better ; the theory that liquors long mellowing in the cask get rid of fusel oil and other alcohols not ethylic, and develop soothing ethers, seems actually supported by facts ; certain it is, moreover, that new liquors adulterated with the higher atomic and more fiery alcohols, are excitant, and therefore antagonistic of sleep. A tablespoonful or two of pure whiskey taken on going to bed will often relieve the insomnia of the exhausted, the irritable, the nervous ; the insomnia due to mental overwork or worry will often promptly yield to the alcoholic potion. It is well to administer the spirit in a tumbler of hot water,—as hot as can be drunk,—as the heat favorably excites the stomach, and through that organ reflexly soothes and inhibits the cerebrum.

Unfortunately, the sleep produced by alcohol is often of short duration ; the patient awakes after a couple of hours but little refreshed, and may lie awake much of the night without being able to go to sleep again.

Ginger, peppermint, camphor, lavender, cardamoms, and other of the gastro-intestinal stimulants and "carminatives," taken with hot water, occasionally prove hypnotic. Even hot water alone may induce sleep if drunk freely on going to bed ; in such cases it may be supposed that the insomnia is the result of a dyspeptic state. A few drops of the aromatic spirits of ammonia, or of the

ammoniated tincture of valerian, will sometimes enable the individual speedily to pass the barrier which separates the waking from the sleeping state. Many a person, rendered sleepless by a disordered stomach,—the seat of acrid fermentations,—has been enabled to realize immediate quiescence of both stomach and cerebrum by a dose of rhubarb and soda, a drachm of Carlsbad salt in a cup of hot water, or even the same quantity of bicarbonate of sodium taken in the same way.

Among the newer hypnotics must be mentioned *bromide of potassium*, which still has a great reputation as a sleep-producer. It probably produces its effects, as Vulpian taught, not by anæmiating the cortex, but by the influence which it directly exerts on the anatomical elements.* It simply "lessens the functional activity of the brain, without disturbing the relation of one part to another" (Brunton). Where the indication is to diminish cerebral or spinal irritability; where the brain is hyperæmic from excess of mental toil, from prolonged watching, from abuse of stimulants (coffee, alcohol, etc.); in nervous erethism characterized by emotional excitability, exaggeration of the reflex activity; in the insomnia of fevers, and in genito-urinary insomnia; bromide of potassium (at least till the discovery of chloral) has been the best hypnotic known to the profession. It depresses innervation generally, and is a debilitant of the heart; hence in the feeble, asthenic, and cardiac it is to be prescribed with caution. The dose is large,—20 to 40, and even 60 grains at bedtime. It may often with advantage be associated with alcohol, calisaya, and other hypnotics, as chloral and morphine.

The discovery by Liebreich, in 1869, of the hypnotic properties of *hydrate of chloral* may be regarded as one of the most important therapeutic discoveries of modern times. The experience of the past twenty-one years has more than justified the first conclusions respecting its actions and uses, and it may still be regarded as, on the whole, the best hypnotic we possess. Its principal advantages are—1. It is speedy and generally certain in its action. 2. There is no preliminary period of excitement. 3. Its effects are prolonged, and the sleep which it produces is calm, tranquil, and refreshing; the patient wakes out of the chloral sleep as out of natural sleep. 4. It can be given with good results in cases where opium is not tolerated. 5. There are seldom any unpleasant or injurious after-effects; it does not disturb the secretions or excretions, as do many other hypnotics. 6. It has a wide range of usefulness besides being simply a sleep producer; in all morbid cerebro-spinal conditions attendant with excitation, delirium, or spasm it is markedly beneficial; in the insomnia due to delirium tremens, acute mania, general paralysis of the insane, puerperal mania, chorea, tetanus, etc., it is of great value.

Among its disadvantages are—1. It is a cardiac depressant, and therefore must be given with great caution or withheld in organic diseases of the heart. 2. It is a dangerous remedy when long continued, its effects on the brain, and consequently on the mental functions and disposition, being deplorable. The *chloral habit* is, doubtless, quite as bad as the morphine habit. "Its employment," says MacFarlane, "is so fraught with risk that its use, except under medical advice, is much to be deprecated.

"At first the mental depression and melancholia from which the patient suffers are alleviated by a dose of the drug; after a time, it fails to soothe, and may even excite. The victim gravitates into a pitiable state of mental weakness and demoralization, becoming childish, vacillating, and untruthful; sometimes dejected, at other times excited, and having suicidal tendencies. The symptoms are due to cerebral anæmia and enervation of the heart, lungs, etc.†"

Next, perhaps, in importance to chloral, comes *sulphonal*. This is also a pure hypnotic; it does not excite, cause delirium, affect the secretions, etc., like narcotics. The sleep which it produces is marvellously like natural sleep. Few unpleasant symptoms—at the most, a little nausea, vertigo, titubation, which are temporary—attend its employment. It is, however, not an analgesic nor an antispasmodic; does not depress reflex spinal excitability, like chloral or bromide; does not enfeeble the heart. In the insomnia of neurasthenia, mental depression, overwork, and worry it often has a charming effect.

There is a class of patients who are especially benefited by sulphonal. They are men of business who are beset with cares. They go to sleep at a certain hour, but are sure to wake between one and three o'clock in the

* "Leçons sur les Vaso-Moteurs."

† MacFarlane, "Insomnia and its Therapeutics," 1890.

morning, and then they will lie awake till morning; may possibly snatch an hour or two of sleep after daylight. Here a dose of 20 grains of sulphonal at bedtime will hardly fail to give a good night's sleep, and by being taken a few nights in succession, a morbid habit may be broken.

Paraldehyde is so nauseous that many patients refuse to take it. It is less analgesic than chloral; is not a cardiac poison. It is thought to be superior to chloral in mental alienation, in nervous insomnia, and in the insomnia due to abuse of alcohol. It has been found to be very valuable as a calmative and hypnotic in hysteria; like chloral, it is antispasmodic. It is said not to produce injurious effects if taken for a great length of time, nor does it soon lose its effect. It is more effectual than sulphonal in the insomnia of acute or chronic disease where pain, cough, dyspnœa, or fever exist (C. M. Hay). It belongs to the class of pure hypnotics, along with sulphonal and chloral.

Urethan is often of service in sleeplessness due to slight causes. The dose is rather large,—20 to 30 grains. It is by no means an active hypnotic, and is not analgesic. In fact, its range of usefulness is limited to psychical insomnia, and to insomnia due to mental or physical overwork.

Somnal has been for too short a time before the profession to permit any critical judgment of its merits. In 30-grain doses it is said "to act half an hour after the ingestion, causing a calm sleep of six or eight hours' duration, without any disagreeable after-effects. It has no action on the pulse, respiration, or temperature." The writer from whom we have quoted (Boymond) adds, that "it possesses the properties of chloral, without any of the disadvantages of the latter drug."*

Amylene hydrate is given in large doses,—60 to 90 grains. The most recent and thorough testings of this drug have been made by Dr. W. H. Flint (see THERAPEUTIC GAZETTE, January 15, 1890, p. 69). "In therapeutic doses it produces sleep by its soporific action on the cerebrum. It is applicable, therapeutically, to insomnia from nervousness, from excessive mental exertion, from anæmia, fevers, insanity, cardiac diseases, the opium habit;" is not efficacious in insomnia from pain, cough, and from that due to cardiac and uræmic dyspnœa." After-effects are slight or *nil*.

Chloralamide is another pure hypnotic which seems to be of considerable value. We have little to add respecting this new hypnotic to what we have said in former numbers of the THERAPEUTIC GAZETTE (see the volume for 1889, pp. 611, 686). According to some recent investigations of Dr. Langgaard, of Berlin, the new drug is a less powerful hypnotic, weight for weight, than hydrate of chloral. The ordinary dose for an adult is 30 to 45 grains. Sleep comes on in from half an hour to three hours after the drug has been taken. Chloralamide shows itself to the best advantage where the sleeplessness is of purely nervous origin, and is not contraindicated where there is some amount of pain, and where there is a moderate amount of cough, as well as in a number of mental affections not accompanied by any considerable degree of excitement. It has proved serviceable in delirium tremens, and even in cardia asthma. It possesses a real advantage over chloral in not being a cardiac depressant.

Where shall the list of new hypnotics end? We have not given all, or nearly all, the agents, new and old, for which hypnotic virtues are claimed, but the very abundance of these agents shows the more or less unsatisfactory nature of all; it suggests, moreover, the multiplicity of causes productive of insomnia and the essential unrest of our modern life.

* *Semaine Médicale*, 1889, p. 408.

ANTIPHLOGISTICS.

WITH the adoption of new views respecting the pathology of inflammation, the utility of many of the agents of the old antiphlogistic medication has been called in question. As long as inflammation was regarded as due to excessive contractility of the blood-vessels (Hastings), or to spasm of the arterioles (Cullen), or to active dilatation (John Hunter), or to excessive stimulus (Broussais), a depleting and even debilitating treatment, in whose effects the heart and arteries should immediately participate, the most powerful agent of which treatment was general blood-letting, found justification. Sir Astley Cooper, who recognized "the increased action or excitement of the larger arteries leading to the inflamed part" as one principal factor, and who also insisted on an overaction of the inflamed capillaries, also taught that bleeding is "the principal means of relieving inflammation;" "it lessens the action of the whole sanguiniferous system, and, of course, of that part of it which is directly concerned in regu-

lating the quantity of blood transmitted to the part affected." Nauseating medicines, as tartar emetic and powerful purgatives, with active diaphoretics, which both weaken the pulse and determine blood away from the inflamed parts, were also antiphlogistic agents much relied on.*

Among the essentially modern views of inflammation we need mention only the *exaggerated-nutrition* theory of Virchow and Stricker, and the *vascular alteration* theory of Cohnheim; the neuro-humoral theories have been almost completely abandoned.

It cannot be maintained that the cellular theory, in which nutritive and formative changes in the tissue-cells constitute the essence of inflammation, now finds many defenders, and it is doubtful whether Virchow himself holds to it in its original form. The objections have been sufficiently stated by Burdon Sanderson, Cohnheim, and others. The view which now receives most general acceptance is that so forcibly set forth by Burdon Sanderson in his Lumleian lectures, and by Cohnheim in his "General Pathology," a translation of which has been lately published by the Sydenham Society. According to this theory, the proximate cause, the essential condition of inflammation, is a molecular alteration of the blood-vessels—particularly of the veins and capillaries—of an injured part, an alteration by which the permeability and porousness of the walls is augmented, with a resulting sero-fibrinous or albuminous exudation, and emigration of white and red blood corpuscles. The stasis and albuminous exudation, with the diapedesis of leucocytes, constitute the central phenomenon, the necessary objective sign of inflammation.

We have not time here to recapitulate the arguments by which this theory seems to be removed from the realm of hypothesis to that of established doctrine. It is one of the merits of the late lamented Cohnheim that he has given us so lucid an exposition of this pathological notion, making it almost a matter of experimental demonstration. The essential nature of inflammation, then, is that it is not simply a modification of normal processes, but a destruction. Sanderson emphasizes the words *damage* and *injury* in his definition. We have not disorder of function, but *arrest*, tending towards death.

Gerster would add here (with much probability) the *rôle* of microbes as necessary factors; these microbes generate ptomaïnes, whose toxic influence affects the adjacent vaso-motor nerves, causing a strong vascular dilatation, which becomes manifest in the shape of an active hyperæmia,—"*rubor*," and subsequent exudations,—"*turgor*." The infiltrated portions, devitalized by suppression of the normal circulation, readily succumb to the inroads of millions of micro-organisms, and necrosis and suppuration follow.†

According to this view, the restoration of the part to its natural state must be as simple as its departure from it,—*i.e.*, by "resolution,"—the temporarily-arrested process goes on again; or, if the process has proceeded to the death of the affected part, the destroyed portion must be restored by an exogenous growth from the margin; the cells outside the limit of injury must grow into the gap and fill it up.‡

With this brief statement of the modern doctrine of inflammation, we come to the subject of antiphlogistic medication, and may ask whether it has any place in the new pathology?

Doubtless the word *antiphlogistic* has come to sound a little old-fashioned, and is seldom pronounced by the medical man of to-day. It has so long been used to denote bloodletting that it means little else to the ordinary medical mind. It is a significant fact that in one of the most popular American treatises on therapeutics—that of H. C. Wood—the word *antiphlogistic* is not given at all.

And yet the true meaning of the term is *a remedy to oppose inflammation;* to prevent, to arrest it, to counteract its effects; and in this sense the term is still a legitimate one. Much may be effectively done in the earlier stages—before the inflammation is actually established—to prevent, to arrest, to favorably modify the destructive process. Removal of the cause when this is possible; rest of the disordered part or organ; elevation of a hyperæmic limb; the judicious application of cold, to lessen local determination of blood; the application of a sinapism to the surface, to produce powerful revulsion; the exhibition of a purgative or diaphoretic, to open up other vascular sluiceways, and drive blood from the focus of congestion; even the administration of veratrum, to diminish vascular tension, and hence local fluxion, are all antiphlogistic means, which, if employed sufficiently early, may

* *Vide* "Cooper's Surgical Dictionary," 4th ed., art. "Inflammation."

† Gerster, "Septic and Aseptic Surgery," p. 179.

‡ Burdon Sanderson, *loc. cit.*

either prevent an inflammation or minimize its effects. When, however, an inflammation is established, when there is a local injury that will require days for its reparation, and especially the active co-operation of the healthy tissue-cells of the vicinity, whose vitality and whose nutrition (no more than that of the inflamed part) should not be impaired by depleting remedies, then therapeutic intervention should be in the direction of assisting the natural processes of restoration. Here topical bleedings often give remarkable relief to an inflamed part, both by diminishing excessive tension and thus saving the tissues from destruction, and by giving free vent to spoiled exudation elements, and especially to pus. Deep incisions made early in a developing phlegmon, felon, or carbuncle, followed by antiseptic lotions, and, in some cases, drainage, will often abort the inflammation by removing tension and by emptying the focus of its infective contents. By stopping the growth and multiplication of microbes, the spread of the inflammation is stopped. Gerster adds, as necessary antiphlogistic measures of considerable importance, that "all conditions tending to impede free arterial and venous circulation must be eliminated by proper position,—that is, elevation of limbs, removal of constricting dressings or clothing." Lastly, the necessity of rest to the inflamed part is sufficiently obvious.

Purging, though reckoned "as a principal means of diminishing inflammation" by the old authorities, is not to be prescribed as a routine measure. It is hard to understand how, by diminishing the vital forces or reducing the watery constituents of the blood, one is going to help restore a part that has been damaged in its vital properties. "As for purgatives," says Boyer,* "they must be used with discretion. There are none of them antiphlogistic, as has been pretended. They always produce more or less irritation, and can only be applicable when the cause of the inflammation is in the intestinal canal." From this judgment of one of the earliest writers of this century we can hardly demur. At the same time the faith of many practitioners in the *derivative* power of purging in some inflammations (particularly those of the encephalon) cannot be easily shaken.

There is general agreement as to the utility of *cold applications* in the first stages of local inflammation, and ice to the head is still vaunted in the treatment of the acute period of encephalic inflammations. Refrigeration is a severe measure, which should be prescribed with great care and judgment. It meets certain symptoms of the inflammation, diminishing the heat, the exudation, the morbid sensibility and pain, the determination of blood, and perhaps favors the contraction and tonicity of the blood-vessels. At the same time there is danger that the prolonged application of cold, especially in asthenic subjects, may injuriously depress the already lowered vitality of the inflamed part, arresting the nutritive processes, and entailing gangrene. Certainly a very moderate application of cold in some subjects seems to be followed by severe reaction and an aggravation of the local mischief. Hence cold is not to be indiscriminately advised. Warm applications are generally safer and more soothing. It is, perhaps, not always easy to specify those cases which are likely to be most benefited by cold and those where heat is especially indicated, and surgical authorities generally insist that the feelings of the patient are the best guide on this point. Heat is a powerful stimulant of the circulation, is conservative of the vitality of a part, and promotes suppuration where this is inevitable. A clean cloth, dipped in and wrung out of hot water, covered over with a piece of oiled silk, says Gerster, is the best, the cheapest, and the least unappetizing of all cataplasms.

Counter irritants are supposed to act by a reflex influence on the vaso-motor or trophic nerves of an inflamed part, as well as those of the immediate vicinity, promoting vascular tonicity and contractility, and stimulating repair. One may be justified in indulging some scepticism as to the real benefit which these outward applications confer in the case of any superficial or deep seated inflammation, especially when that inflammation is acute. It must be remembered *that stimulating or depressing nervous influence goes really but a little way in modifying an inflammation*, for it has been shown that inflammation is *essentially* independent of the nervous system. The good effect of sinapisms is almost certain to be transitory, and as for blisters, they are known to aggravate acute stages, and authorities are far from being agreed as to their utility in the declining periods of an inflammation. Certainly very many good therapeutists see sufficient reason to dispense with them altogether.

From our present point of view, *general blood letting* can do nothing to prevent, check,

* "Traité des Maladies Chirurgicales," t. i. p. 39.

or moderate an inflammation, though possibly sometimes remedial in congestion. The local damage, the vascular alteration, cannot be attenuated by bleeding. More than that, bleeding is absolutely harmful, by lowering the vital forces, and so retarding resolution and restoration, and favoring microbial invasion and proliferation. As for the utility of bloodletting in general inflammations, and especially in pneumonia, so long considered as the type of internal inflammations,—it is not necessary that we should repeat here the reasons which have led to the almost complete rejection of this ancient therapeutic measure in just those cases where it was formerly thought to be pre-eminently indicated. These reasons were stated by J. Hughes Bennett, almost forty years ago, in a masterly examination of the whole subject, and subsequent writers have done little but confirm his conclusions. Germain Sée, in his "Diseases of the Lungs of a Specific Character," taking his stand-point from the modern pathology, which insists on the parasitic nature of pneumonia, has forcibly restated the arguments which have led to the abandonment of bleeding; and when we ask ourselves, in consideration of the fact that the pneumonic parasite is not affected injuriously by bleeding, that bleeding does not diminish the mortality of the disease or abridge its duration, "Is blood-letting really an antiphlogistic measure?" we are obliged to answer the question in the negative.

PHARMACOLOGICAL AND THERAPEUTIC PROPERTIES OF PHENYL-URETHAN, OR EUPHORIN.

THE name euphorin has been suggested by Professor Giacosa for phenyl-urethan,

$$CO<\begin{matrix}OC_2H_5\\NH(C_6H_5),\end{matrix}$$

a combination resulting from the action of æthylic ether on aniline. It is a white, crystalline powder, with a faint aromatic odor, and a taste which, at first scarcely appreciable, subsequently becomes more marked, and resembles cloves.

Euphorin is only soluble with great difficulty in cold water, is very soluble in alcohol, and in mixtures of alcohol and water, particularly in white wines, which seem to be especially suitable for its administration. In the *Therapeutische Monatshefte* for September, 1890, Dr. L. Sansoni, of Turin, contributes the results of his clinical experiments made with this drug, referring at the same time to the study of Professor Giacosa as to the pharmacological action of euphorin, which, however, appears not to have been yet published.

Dr. Sansoni has found that small amounts of euphorin are well supported by man and the higher animals, even intraperitoneal injections of a solution of sixty grains of euphorin in alcohol in a dog weighing twenty pounds producing no serious symptoms; while to produce death in a rabbit weighing four pounds, seventy-five grains of euphorin suspended in water and introduced into the stomach through a sound were required, death occurring after five hours, accompanied by symptoms of collapse, gradual reduction of temperature, progressive weakness, anæsthesia, and suppression of reflexes. In a healthy individual doses of from 1½ to 3 grains produced no change in the pulse, respiration, or temperature. In the dog, as determined by the use of a mercurial manometer, no reduction of blood-pressure followed the administration of even large doses. Still more worthy of note is the statement by Dr. Sansoni, in view of the chemical composition of this substance, that euphorin never produces the appearance of methæmoglobin, and even in cases of fatal poisoning the blood always remains normal, no alteration being detectable by means of the spectroscope. After the administration of euphorin the urine shows the P-amido-phenol reaction either directly after the excretion of the urine or after rendering it alkaline by potassium carbonate; neither phenol nor aniline are, however, to be found in the urine, although euphorin liberates small amounts of phenol when in contact with putrefying bodies. The author further adds that euphorin apparently increases the production of urea, but does not lead to the appearance in the urine of albumen or other reducing substances.

Dr. Sansoni writes that he has employed this substance in a large variety of febrile affections, and his results show that it possesses marked antithermic, antiseptic, and antirheumatic properties, while in a few cases it appeared to act as an analgesic. Given in a number of acute and chronic febrile affections, in the pure form, in capsules or dissolved in wine, marked reduction of temperature was noted to have occurred within an hour or an hour and a half. In a few cases, he states, immediately after the administration of the remedy, the tempera-

ture was elevated for a few tenths degree, but that the subsequent fall of temperature was then proportionately greater. The fall of temperature was accompanied by sensations of heat, which varied according to the peculiarity of the individual and the amount of drug given, and were followed by a more or less abundant sweat secretion. The maximum depression of temperature was ordinarily reached in three or four hours, and the effect lasted, as a rule, five to seven hours. The subsequent restoration of the high temperature ordinarily occurred suddenly, and was accompanied by chills, whose intensity and duration were in proportion to the severity of the disease and the intensity of the fever. In a few cases in which the fever was very high and the chill very intense and prolonged, under the influence of the remedy the temperature fell below normal; in one case more than 2° C., and that without exceeding the ordinary doses.

During the apyrexia produced by this remedy the patients usually noted improvement in their general condition, although sometimes complaining of chilliness, while in but few cases was there any cyanosis; where this occurred it was slight and transient. The pulse and respiration remained regular, becoming proportionately slow to the reduction of temperature.

Dr. Sansoni states in the most positive manner that collapse was never produced by this drug even when the temperature was reduced far below normal, even to the point which would ordinarily be accompanied by the production of collapse if due to the exhibition of the other antipyretic remedies. Different individuals offer different degrees of susceptibility to the action of euphorin, and the author recommends that, when it is used for the first time, small doses should be given, not exceeding usually fifteen to twenty-two grains in a day. Dr. Sansoni, further, makes the statement that, while these doses are ordinarily well borne by feeble individuals, in some cases where the constitution is apparently a much stronger one extremely low temperature will be produced, but without the appearance of other symptoms of collapse. Seven and one-half grains of euphorin correspond to about fifteen grains of antipyrin.

Dr. Sansoni has also employed euphorin in acute and chronic rheumatism, in which affections larger doses are required than when the remedy is used simply as an antipyretic. He recommends its use in the amount of 22 to 30 grains, which are better given in a few large doses than in a number of divided small doses. It is claimed in acute rheumatism to readily reduce the pain and fever, while in chronic cases which had already resisted all the other specifics, such as preparations of the salicylates, antipyrin, antifebrin, and phenacetin, but slight relief in pain and increased movement was all that was obtained. The author further made a number of trials of euphorin to determine as to whether it possessed an analgesic effect in tabes dorsalis, neuralgia, orchitis, etc., and he states that in some cases the effects were very satisfactory, while in others but a moderate relief of pain, or entire absence of any effect was noted. He has also used it as an external dressing in indolent ulcers in the form of a powder, and has found that it has in his hands acted better than any other remedy; and although this employment of euphorin is said to produce slight pain, yet its other great advantages more than overbalance this effect.

Dr. Sansoni attributes the reduction of temperature to the dilatation of the peripheral blood-vessels, as is the case with most of the other antipyretics.

It is worthy of note, in reference to the action of this remedy, that although it closely agrees with antifebrin in its constitution, yet it is claimed by Dr. Sansoni to be entirely free from any action on the blood, and its use seems practically to be free from any danger of collapse. Pharmacologically, therefore, its action is more allied to urethan.

THE TREATMENT OF SYPHILIS WITH HYDROCHLORIC-GLUTIN-PEPTONE-SUBLIMATE.

ALTHOUGH numerous methods and innumerable preparations have been recommended for the mercurial treatment of syphilis, yet there is scarcely one of them whose use is not largely detracted from by some important defect or objection. It is believed that the employment of the inunction method and the use of the insoluble salts of mercury possess great advantages; certainly by both of these methods mercury is rapidly absorbed, and so is capable of producing energetic effects on the syphilitic process. The method of subcutaneous injection has the advantages over the inunction method of greater cleanliness and convenience, and, further, its employment does not require more frequent intervals than from four to five days. The disadvantage of the

subcutaneous method principally consists in the fact that when once a certain amount of mercury has been injected subcutaneously its subsequent control becomes absolutely impossible: so that when after the hypodermic injection symptoms of stomatitis appear, the physician is absolutely helpless to control further absorption; besides it is possible that the quantity of mercury injected into the skin may excite inflammatory action, and so become encapsulated, and so perhaps through a trauma be absorbed when this is least desirable. In case of the soluble preparations the state of affairs is different when the injections are made daily, the mercury is rapidly absorbed and eliminated, and should stomatitis appear, this complication may be arrested by a simple suspension of injections. But this rapid absorbability of the mercury salts, while producing rapid action on the syphilitic process, are, nevertheless, quite as rapidly excreted, and their action is, therefore, a transient one. In estimating the value of any mercurial preparations two points are to be considered,—first, the disappearance of the pressing symptoms of syphilis, and then the occurrence of relapses, while, further, the usefulness of the preparation is not only qualified by the promptness of its action, but also by its freedom from after-effects, either local or general.

There are but few soluble preparations of mercury which at all fulfil these requirements. Any addition to the list is, therefore, to be regarded as a great advance in our methods of combating this disease.

In the *Therapeutische Monatshefte* for September 18, 1890, Dr. Hüfler, assistant in the clinic of Professor Strümpell, in Erlangen, describes, under the name of hydrochloric-glutin-peptone-sublimate, a preparation prepared by Dr. Paal, of the same institution. The author writes that by treating gelatin with dilute hydrochloric acid, gelatin (glutin) peptone results, which contains about twelve per cent. of hydrochloric acid, and is soluble in every proportion, not only in water, but in alcohol, and unites with corrosive sublimate to form double salts, of which one, containing fifty per cent. of sublimate, is insoluble in alcohol, while the other, containing a smaller proportion of corrosive sublimate, is soluble in alcohol. Both double salts are soluble in water. Dr. Hüfler has employed in his therapeutic studies the double salt, containing precisely twenty-five per cent. of corrosive sublimate. It occurs in white shining scales, in the form of a white hygroscopic powder. Its watery solution is not precipitated either by the caustic alkalies or alkaline carbonates or by blood or solutions of albumen. The corrosive characters of the sublimate are claimed to be lost through combination with the peptone salts, and in this respect, and in its chemical composition, it differs from all hitherto described sublimate peptones. The majority of the peptones are made by precipitating a watery solution of peptone with a solution of corrosive sublimate, the corrosive sublimate peptone then falling as a white insoluble precipitate, which is redissolved in a three to five per cent. salt solution. Such a solution is, however, extremely unstable, and in that respect differs from the preparation described by Dr. Hüfler, which is claimed to undergo no alteration, even although kept exposed to the light in glass-stoppered bottles for more than a year.

Dr. Hüfler writes that he has since the beginning of June, 1889, to the end of March, 1890, treated sixty patients at the Erlangen Clinic and ten in private practice with this preparation, thirteen hundred injections of the hydrochloric-glutin-peptone-sublimate being made in all. The solutions were so diluted that each syringeful contained one-sixth grain of corrosive sublimate. The injections were either made subcutaneously or into the muscles in the gluteal region, one injection being made each day as long as any evidences of syphilis were present. Whenever any symptoms of stomatitis appeared, the injections were suspended for four or five days, and the author states that in no case did any severe case of stomatitis occur, although out of these seventy patients, in sixteen the treatment had to be suspended on account of commencing trouble in the mouth. The cases embraced a large number of varieties of syphilitic manifestations, and the author claims that in all success was very prompt. The average number of injections in all the patients was twenty. The highest number forty-five, the smallest five. The pain occasioned by the injection is stated to be trivial. In no case was an abscess occasioned, even although the injections were not performed under strict antiseptic precautions. The most that was done was to wash the part with a dilute solution of carbolic acid, in which the canula of the syringe had been placed for some time before employment. The author concludes by the statement that this sublimate-peptone is preferable to any other method of employing the mercury treatment of syphilis, *first*, on account of its certain and rapid action; *second*,

on account of the almost freedom from pain attending the injections; and, *third*, on account of the slight local irritant effects.

It is hardly necessary to add that this preparation is, as is the case with every one of the new remedies introduced by our enterprising German *confrères*, protected by a patent.

Reports on Therapeutic Progress.

THE ANALGESIC VALUE OF ANTIPYRIN INTRA- AND POST-PARTUM.

First used as an antipyretic in large doses, antipyrin has been found during the past five years to be an almost universal panacea in smaller doses for "nerve pain," and is now prescribed empirically in all cases of neuralgia of whatever part of the body. Its value in certain cases of dysmenorrhœa of the so-called "spasmodic" type first directed attention to the generative organs as a field for its use, and the medical journals up to the present time have scattered through them results arising from the use of antipyrin (certainly of a most variable character) in connection with the pregnant condition and labor. Windelschmidt published, among the earlier observers, an interesting case of relief from dysmenorrhœa which had lasted eight days, the pain being very violent. Relief was obtained by rectal injections of three doses of 2 grammes (about 31 grains) of the drug; the two first with an interval of twelve hours, the third twenty-four hours later. Convulsive action, which was present before its administration, also ceased. Dellenbaugh and Chouppe also relate similar instances; the latter, in addition, found great benefit from a rectal injection given to a patient with a painful uterine myoma which had resisted all other remedies.

The mode in which this drug relieves uterine pain is doubtful. It is generally acknowledged that the most essential properties of the uterine muscular fibres are extensibility, retractility, contractility, the last being quite distinct from retractility, and always occurring when a foreign body is to be expelled from the uterus.

Dr. John Phillips suggests that uterine pains are produced by two different mechanisms (*Lancet*, September 20, 1890),—*first*, when there is an absence of retractility, and as a consequence a formation of clots; and, *second*, when, in spite of sufficient retractility, pains persist, in consequence of intemperate use of ergot, or retention of placental *débris*.

Rivière thinks that antipyrin relieves this pain entirely, and nerve pain or a neuralgia, and that its action upon muscular fibre is negative. He quotes Chiara in support of this assertion, who, as the result of its use in twelve cases of pregnancy, found that in therapeutic doses it does not show appreciable effect enough to make one believe in it as having an oxytocic or exciting action on the uterine fibre during pregnancy and the physiological state.

The questions which seem to be at issue regarding the use of this drug are the following: 1. Does its administration during or immediately after labor tend to relieve pain, and, if so, at what stage are its effects most marked? 2. Has it any effect on the uterine pains in augmenting their number or intensity, or the reverse? 3. Is cervical dilatation more rapid under its influence? 4. Does its administration promote or tend to post-partum hemorrhage? 5. What is its effect upon the process of lactation? The property it possesses of diminishing high temperatures, as in puerperal fever, is of the highest value, but it appears to be outside the questions at issue.

Dr. Phillips thinks that a word of warning should be given as to its indiscriminate use in large doses in attempting to reduce pyrexia, as he has met with records of several deaths from collapse after its use.

Under the first heading the question resolves itself naturally into the relative value of the drug during the two stages,—intra- and post-partum. To elicit an answer to these inquiries, he carefully administered the drug to forty-two cases, and selected as many primiparæ as possible, in consequence of the usually more lengthened stage of intra-partum; thirty-one were of this type. The others—eleven in number—were chosen at random. The drug was not given until labor had commenced, and until the dilating pains had set in regularly; the number occurring in an hour was noted, and then compared with those which passed in the same time shortly after the administration of the drug. The temperature and pulse were taken at regular intervals, and notes made at the time as to the severity of the pains, and the patient's statements as to the relief given or not by the medicine. The method of administration was by the mouth, and in 15-grain doses, made up of half a drachm of compound spirit of ammonium and cinnamon-

water, including two doses given during the expulsive stage. Sixty grains were given. Sickness never occurred after a dose during the first stage, and after the second during the expulsive stage. It was noticed that there was a tendency to retardation, at first becoming more marked after the second dose. There was no doubt as to the relief from the pain after the first dose, marked effect after the second dose, but absolutely none during the expulsive stage. Dr. Phillips publishes a table showing the results of the administration of the drug in the forty-two cases. From this it would seem that in the stage of dilatation, in fifteen cases out of thirty-one, in which the drug was administered, or in nearly fifty per cent., it was very beneficial,—that is, the patient either strongly asserted that she felt great relief, or it was self-evident by her falling asleep or becoming more quiescent.

Among the multiparæ the number relieved was not so great,—namely, 36.3 per cent. On the other hand, the absolute failures among the primiparæ amounted to 32.2 per cent., while among the multiparæ it amounted to 36.3 per cent. Queirel, who admits the value of the drug chiefly in this stage, found its success undoubted in fifteen women out of twenty, or seventy-five per cent. Of these fifteen patients, eleven were multiparæ and the other four primiparæ. Of the five refractive patients, only one was a multipara, thus concluding rather that the action of antipyrin is more marked on that class. Winkle never administers it except during the first stage, and he has found the relief almost general following its administration.

By comparing statistics, when the drug was taken and when not, he gathered that it does not increase the duration of the first stage, but, on the contrary, tends to shorten it on an average of about half an hour, while in the second stage it remains practically the same. In the expulsive stage the results were frequently negative, as absolute relief was never observed either in primiparæ or multiparæ patients, and this statement is corroborated by nearly all writers on this subject, with one or two exceptions. Its administration post-partum for after-pains was chiefly among multiparæ, where Dr. Phillips found it to be very beneficial in five out of eight cases, and he found that the failures were those in which the after-pains were chiefly due to collection and expulsion of blood clots, while the successful ones were those in which the pains were more of a grinding or neuralgic character and not followed by the passage of clots. Dr. Phillips, however, has noted that the use of antipyrin greatly reduces the secretion of milk, and, in cases where weaning is necessary, early after delivery, the use of antipyrin in 15 grain doses three times daily will in many cases entirely arrest the milk secretion. As regards its direct influence on the heart and temperature, Dr. Phillips's experience shows that in the great number of cases there was no increase in the pulse, but a slight reduction of temperature; half an hour after its administration the pulse was diminished in frequency, the patient having at the time a sensation of palpitation, while respiration did not appear to be appreciably affected. Antipyrin may be administered either by the mouth, rectum, or by subcutaneous injection, in the latter case the pain being greatly reduced by the addition of cocaine. By mouth it should always be taken with some diffusible stimulant, like ammonia; and Dr. Phillips draws the following conclusions from his experience with antipyrin in this connection: 1. That antipyrin, in doses of 15 grains, repeated at proper intervals, is a remedy of great value in the dilating stage of labor, and more especially in primiparæ, but that its uncertainty of action renders it less reliable than chloral. 2. That during the expulsive stage of labor it is useless as an analgesic, in whatever way it may be administered. 3. That in certain kinds of after-pains it is very efficacious. 4. That it is without any ecbolic properties, and has little or no effect on the frequency of occurrence of labor-pains during the dilating stage, and does not aid dilatation of the os uteri. 5. That the effect of the drug appears to be more marked on impressionable and neurotic women, and those of dark complexion and spare frame, than on others. 6. That it should never be given by mouth without the addition of a diffusible stimulant.

PROTOPINE—A NEW OPIUM ALKALOID.

Protopine was first isolated from opium in 1870 by Hesse. It has a formula of $C_{20}H_{19}O_5$, and is present in but small amount. Since then its presence has been detected by Eykmann in the *Macleya cordata*, and by Selle in the *Chelidonium majus*, plants which also belong to the family of the Paveraceæ.

Dr. Engel has recently made some experiments on cold-blooded animals (frogs) and warm-blooded animals (guinea-pigs, cats

and rabbits) to determine the physiological properties of protopine, and his results, which are summarized in the following statements, are published in the *Gazette Médicale de Paris*, October 11, 1890:

1. In small doses protopine exercises on the frog narcotic effects similar to those produced by other opium alkaloids.

2. In large doses it produces a paralyzing action on the muscular substance, and on the terminal ramifications of the peripheral nerves.

3. With small or moderate doses reflex action is not abolished, although this occurs when large doses are given.

4. Protopine produces toxic effects in mammals comparable to those produced by camphor, death being produced by a paralysis of the respiratory centre.

SUBCUTANEOUS INJECTION OF WATER AND ITS THERAPEUTIC USES.

According to the Swiss correspondent of the *British Medical Journal* for September 20, 1890, PROFESSOR SAHLI, of Berne, has just published a paper in which he forcibly draws attention to a simple method of rapid and safe introduction of large quantities of water into the system. The method consists in the subcutaneous injection of a sterilized blood-warm physiological saline solution (that is, a .73 per cent. solution of chloride of sodium) by means of a large Erlenmeyer's flask, with an elastic tube and a hollow needle as thick as a knitting-needle. As much as one litre of the solution can be easily injected in from five to fifteen minutes. If necessary, the procedure may be safely repeated four or five times a day. The best situation for the injection is the anterior abdominal wall. On each occasion the skin should previously be thoroughly washed with soap and corrosive sublimate, and the puncture subsequently sealed with aseptic cotton-wool and collodion. Under such precautions not the slightest signs of any local reaction are ever observed. In some patients, especially in those with flabby abdominal integuments, the procedure causes but trifling pain; in very sensitive or restless persons, however, general anæsthesia is advisable. The effects of the injections are thought to be as follows: 1. Under certain conditions they thoroughly wash out the patient's system by inducing profuse diuresis, accompanied by a strikingly increased elimination of solid constituents of the urine. 2. They dilute the body juices and poisonous substances present therein. 3. They furnish the necessary water-supply to dehydrated tissues. 4. They aid the filling of blood-vessels, and thus raise an unduly lowered arterial tension. Such subcutaneous injection of water is indicated: 1. In cases of uræmia complicating the course of either acute or chronic nephritis, where the injection of a litre of the solution once or twice daily is, as a rule, rapidly followed by a striking abatement of all symptoms. The best results, however, are frequently obtained when the injections are combined with the internal administration of digitalis. 2. In the "typhoid" state, where frequently even after the very first injection delirium ceases, the pulse becomes stronger and fuller, the tongue moister, etc. 3. In Asiatic cholera, cholera nostras, infantile diarrhœa. 4. In poisoning by any toxic substances, but especially by those which are liable to be eliminated from the organisms through the kidneys. 5. In cases where an internal use of water should be avoided (in order to secure physiological rest of the gastro-intestinal tract),—for instance, in cases of perforation of the stomach or bowel, peritonitis, ileus, etc. 6. In cases of acute anæmia from hemorrhage. The method is contraindicated (1) in cases of incipient or expected pulmonary œdema; and (2) in the presence of severe dropsy.

THE TREATMENT OF BURNS.

In the Friedrichshain Hospital in Berlin the following is the method of treatment of burns employed by DR. BARDELEBEN (*Lyon Médicale*, September 14, 1890).

The burned surface is first carefully washed with a two or three per cent. solution of carbolic acid or a three per mille solution of salicylic acid. The blisters are then opened, and the entire surface covered with subnitrate of bismuth finely powdered, and over this a layer of cotton-wool. This dressing is to be renewed as soon as it becomes at all moistened by discharges from the wound. If the burn is very extensive, an ointment of bismuth is substituted for the dry powder.

Dr. Bardeleben asserts that with this dressing cicatrization is much more rapid and suffering much more quickly relieved than is the case with any other form of treatment.

He states that, in spite of the large quantities of bismuth which he has employed, he has never seen any symptoms of poisoning follow its use.

OPERATIONS ON THE PROSTATE.

In a paper presented to the Mississippi Valley Medical Association at Louisville, Dr. Wm. T. Belfield, of Chicago, collects one hundred and thirty-three cases of operations upon the hypertrophied prostate, including eight of his own, as follows: Forty-one by perineal incision, mortality nine per cent.; eighty-eight by suprapubic cystotomy, mortality sixteen per cent.; four by combined perineal and suprapubic incision, none fatal.

In fifty-six of these cases the essential facts before and after operation are furnished; they had been the subjects of cystitis, and dependent upon the catheter for periods varying from one to ten years. In all the cystitis was cured. In thirty-eight (two-thirds) voluntary urination was restored, and continued during the time of observation,—six months to two and a half years; in eighteen this function was not recovered.

Fifteen of these fifty-six cases were complicated with stone; excluding these,—since it might be objected that the cure resulted rather from the calculus extraction than from the prostatic operation,—there remain forty-one cases of uncomplicated prostate operation; of these, thirty-two (four-fifths) recovered the power of urination, in nine this ability was not recovered.

TURPENTINE INHALATIONS IN DIABETES.

The observation of Bremond, that in anæmic individuals, under the influence of repeated inhalations of turpentine, there was marked increase in the amount of hæmoglobin and a considerable increase in the reducing power of the oxyhæmoglobin, suggested to Dr. G. Bufalini the advisability of testing as to whether the favorable action of inhalations of turpentine in broncho-pneumonia, even when of a tubercular character, was not only attributable to the disinfecting power of terpine ($C_{10}H_6$) and its power of reducing secretion, but might not also in part be attributable to its influence on general nutrition, especially as concerned blood-making through the ozone of the turpentine. With this object in view, he estimated the excretion of sugar and urea, during the inhalation of turpentine for twenty-four hours, in two diabetics in whom the tissue-changes had been for several previous days accurately estimated. The specimens of turpentine which he employed were especially rich in ozone, the presence of which was determined by the tincture of guaiacum test. In neither of these cases, however, was there the slightest influence on the amount of urea excreted or in the oxidation of the sugar, even although the sugar was found to be capable of oxidation by the use of arsenic. The administration of 2 to 12 drops of Fowler's solution for ten days served to reduce the sugar more than fifty per cent.—*Centralblatt für Klinische Medicin*, No. 39, 1890.

THE CURABILITY OF CANCEROUS TUMORS BY INTERSTITIAL INJECTIONS OF BICHLORIDE OF MERCURY.

According to the Paris correspondent of the *Medical Press and Circular* for September 17, 1890, Professor Poucel, surgeon to the Marseilles Hospital, suggested, in 1884, that, in order to explain the production of cancer, it would be found at no distant date that the microbe of cancer would be discovered by the microscope. Since then efforts were made to prove the parasitic origin of the disease, and some pretended to have discovered the new microbe, but soon afterwards the pathogenic value of the bacilli, and it was even said that the micro-organism was not necessary to explain the clinical phenomena of cancer. Assuredly the transport of living cancerous cells by the veins, and above all by the lymphatics, would produce homologous tumors wherever those cells could find favorable conditions for germination. This mechanism, although explaining the generalization of the tumor, does not clear up its cause. The bacilli of cancer, as in the case of tubercles, exacts certain conditions which are transmissible in an hereditary sense, and which constitute the predisposition and the tendency. When these exist, the rapid growth of these micro-organisms becomes possible, and through their contact the epitheliums become inflamed, proliferous, and deformed, characterizing cancer. It was with this idea that he undertook a series of researches at the hospital of Marseilles. He had shortly before obtained a prompt cure of a malign pustule of a very bad form by injections of corrosive sublimate around its base, and these injections proved to him, first, that the bichloride had no ill effect on the tissues; and, secondly, that it was efficacious against microbes absorbed through the lymphatics. It appeared to him, then, that it was quite rational to

apply this treatment to cancer, or at least to tumors of a cancerous aspect of which the microbe (if there be one) is transmitted by the same means. Seven patients have already been submitted to this treatment, of whom the details are here given. The first was a woman without any syphilitic antecedents, whom he had treated for a long time with iodide of potassium. In the month of February last she entered the hospital for an ulcerated cancer of the right breast, which commenced ten months previously. The tumor was hard, uneven, and occupied all the mammary gland; the nipple was retracted, and the ulceration occupied the under part, giving exit to a fetid and abundant discharge. The axillary glands were as yet untouched, the tumor was free, and the general condition of the patient good. On the same day of her entry six injections (the half of an ordinary subcutaneous syringe each time) of a solution of bichloride of mercury (1 in 1000) were made into the most indurated points. No salivation followed, but the breast became a little inflamed. A month subsequently the woman returned, when it was found that the tumor had diminished in volume, and another series of injections were made, which were renewed four days subsequently. The decrease of the tumor was much more marked, and the fetid discharge had ceased. Unfortunately, a few days afterwards, the patient was carried off by an attack of angina pectoris, to which she had been for several years subject. Two other patients were treated without success, but both of whom were very advanced in age, one of them being 81. The fourth patient was a retired officer. M. Poucel was called to him for a large phlegmon in the groin. After incision, a hard ganglion, of the size of a nut, was discovered, and as the man had had some dozen of years previously an indurated chancre, he was ordered pills of proto-iodide of mercury. The tumor increased, in spite of this, rapidly, and soon attained the size of a large goose-egg. The son of the patient, a navy surgeon, was called in in consultation, and the cancerous nature of the affection was fully recognized. The first treatment was replaced by injection of the sublimate solution, a series of six every two days. At the end of three weeks all trace of the tumor had disappeared, and no return had taken place up to the present. Curious to say, the son had noticed in his own groin two small ganglions, which had dated three years back. However, about a year ago they became much more enlarged and harder, in spite of every possible treatment. Struck with the result of the injection in his father's case, he tried them on himself, and for that purpose injected four half-syringefuls daily. At the end of a week these glands disappeared. A sixth case was that of a man, who said that he had something wrong with his rectum, as he had often remarked a fetid bloody discharge from the anus. Examination revealed the existence of a malignant tumor. Four injections were made daily, and in twenty days the cancer had *vanished!* The seventh and last case was that of a woman, aged 58. She was very emaciated, and presented in the left breast a hardened nodulated tumor about the size of a large walnut. There was no retraction of the nipple nor any affection of the ganglions. Two injections were made, and renewed eight days subsequently. Three months afterwards, Dr. Poucel revisited the patient, when no trace of the tumor could be found. Four more patients are at present undergoing the treatment, and a notable progress is marked in each of them. In concluding, the author says that he does not pretend that the real treatment of cancer has been found, but what he can affirm is that certain tumors of a *cancerous appearance* are susceptible of being removed by the injections in question, and the chances, as may be conceived, are much greater when practised at the commencement. He used the words *cancerous appearance* advisedly, as in some subjects tainted with hereditary syphilis tumors resembling cancer are observed. However, in these cases iodide of potassium is the specific, whereas it has no effect on the true cancer. Several of his patients were treated, as stated above, by that drug without result. Therefore, it may be regarded as almost certain that all the cases mentioned were real cancers.

THE MECHANICAL TREATMENT OF CHRONIC DYSPEPSIA.

Dr. Cséri, of Buda-Pesth, publishes in the *Wiener Medicinische Wochenschrift* an account of a mechanical plan of treatment of chronic dyspepsia, which he has lately been carrying out with favorable results. The plan consists mainly in suitable dieting and in a peculiar kind of massage. The author practises the latter when the stomach is full, about two or three hours after dinner. Changing frequently his mode of proceeding,

he strokes and kneads the stomach from the fundus towards the pylorus, first gently and superficially, then more energetically, for ten or fifteen minutes, the patient lying on his back with his legs drawn up and breathing with his mouth open. During the last few minutes the massage is extended to the bowels. The manipulation is neither painful nor disagreeable, but is very well borne. The patients experience after the massage a feeling of warmth and comfort; occasionally they feel sleepy, but the fulness and feeling of weight have generally disappeared. After a few days they are in better spirits, all fear of coming cardialgia being entirely banished from their minds. The immediate result of this kind of massage is, that the stomach is freed from the many gases which are continually being generated there, and this alone produces a great feeling of relief. The hour for the massage is chosen because it is the time when part of the already chymified ingesta begins to enter the duodenum from the healthy stomach. In dyspepsia the stomach is generally sluggish, and either the quantity or quality of its secretion is impaired, and consequently chymification or peristaltic motion, or both, are insufficient. It is also known that mechanical stimulation of the stomach may increase its secretion, and the author considers himself justified in concluding that massage increases in this way the process of digestion. He also finds that at the same time, either through neuromuscular or true pathological change, muscular power increases, and the massage, no doubt in a purely mechanical way, helps to advance the stomachic contents into the duodenum. The rapid cure of pains and general malaise after eating in cases of nervous dyspepsia is explained by the fact that the manipulation dilates the pylorus, so that after a few days it offers no impediment to the food passing through it.—*Lancet*, September 20, 1890.

PICROTOXIN AND ITS USES.

In view of the fact that picrotoxin has been recommended for admission to the forthcoming addendum to the British Pharmacopœia, DR. WILLIAM MURREL contributes the following notes to the *Lancet*, September 20, 1890, concerning this useful but neglected remedy:

Although isolated by Boullay as far back as 1812,—six years before the discovery of strychnine,—it has of late failed to maintain its position as a therapeutic agent. It is officinal in the United States and in the French Pharmacopœias, but not in the others. As it is not an alkaloid, it will presumably be introduced into the British Pharmacopœia under the name of picrotoxinum, in accordance with the system of nomenclature adopted in the case of other neutral principles, such as elaterinum, santoninum, and salicinum. It will probably be defined as a neutral principle prepared from the seeds of anamirta paniculata, the cocculus indicus plant. It has been found that cocculus Plukenetii and cocculus lacunosus contain the same principle, but it is hardly likely that they will be recognized as official sources. Whether the cocculus indicus seeds themselves—the old coccole di Levante—will be introduced into the Pharmacopœia remains to be seen.

It is somewhat doubtful whether picrotoxin is or is not a simple body. Barth and Kretschy assert that it is a mixture of three different substances, which they name "picrotoxin" (a bitter, poisonous principle), "picrotin" (a bitter, non-poisonous principle), and "anamirtin." Paternò and Oglialoro question the correctness of these statements, and assert that "picrotoxin" and "picrotin" are mere decomposition products. They object strenuously to the new use of the term "picrotoxin," and rename the picrotoxin of Barth and Kretschy "picrotoxinin," to distinguish it from the true picrotoxin contained naturally in cocculus indicus. They also take objection to the "picrotin," which they believe to be identical with a substance named by them "hydrate of picrotoxide." As to anamirtin, they simply deny its existence in pure picrotoxin, and state that it is never found when the drug is purified by repeated crystallization. Schmidt and Löwenhardt confirm the observations of Paternò and Oglialoro, but they have somewhat complicated matters by discovering a new active principle, which they provisionally name "cocculin." Their opponents, however, are disinclined to admit the validity of their claims, and assert that cocculin is only anamirtin under another name. Whether picrotoxin is or is not a simple substance is a matter of very little importance from a purely pharmacopœial point of view, for it is well known that digitalin, which was at one time officinal, was composed of quite a collection of neutral principles. Moreover, atropine, like the other mydriatic alkaloids, is not a simple body, but can be resolved into tropine and tropic acid.

Picrotoxin has well-marked physical characteristics, and is usually met with in the form of colorless, feathery crystals, having an intensely bitter taste. It is soluble in water, in the proportion of 1 in 240, at a temperature of 60° F., but the solution is not stable, for, when the temperature falls below 40°, nearly half of it crystallizes out. It is much more readily soluble in a mixture of acetic acid and water, and it is to be hoped that a liquor picrotoxini made with acetic acid will be rendered officinal. Picrotoxin does not form salts, and it is the picrotoxin itself which is employed.

Fortunately, the pharmacological action of picrotoxin has been thoroughly worked out, and we deal with a substance having a very definite physiological action. The peculiar convulsions produced by it in the lower animals were accurately described by Glover more than forty years ago. They differ essentially from the tetanic condition caused by strychnine, and are due to stimulation of the motor-centres in the cerebrum, or in the medulla and cord.

It is a curious fact that most of our writers on therapeutics are silent on the subject of picrotoxin. Wood, for example, does not mention it, and Ringer refers to it only incidentally. Bartholow gives a good summary of its uses, but the most exhaustive account is to be found in Phillips's well-known "Vegetable Kingdom." Planat and Hammond recommended it in epilepsy, and Gubler proposed its use in chorea. Phillips lays down definite rules for its employment in various complaints, notably in certain forms of dyspepsia, megrim, and dysmenorrhœa. Externally, it is used in the form of a pigment or paint as a parasiticide. Dr. Murrel has employed it largely in doses of $\frac{1}{60}$ grain in the treatment of the night-sweating of phthisis, for which it is an excellent remedy. It probably acts as an anidrotic by simulating the respiratory centre.

There seems to be some difference of opinion as to the dose. In a well-known dictionary of medicine it was stated to be $\frac{1}{6}$ grain, but this was subsequently corrected, and was obviously a misprint. The correct dose is from $\frac{1}{120}$ to $\frac{1}{60}$ grain. In the Pharmacopœia of the Westminster Hospital there is a pill containing $\frac{1}{120}$ grain, made with sugar of milk and glycerin of tragacanth, and the author never gives more than two of these three times a day. Crichton Browne finds that in rabbits the toxic dose is $\frac{1}{60}$ grain to the pound of body-weight, and in guinea-pigs about $\frac{1}{40}$ grain to the pound.

There are very few cases of poisoning on record. Many years ago several men suffered severely from drinking rum impregnated with cocculus indicus, and in another case a boy of 12 died from swallowing forty grains of a fish-poison containing cocculus indicus, but the strength of the preparation was not known. There might possibly be some difficulty in detecting with certainty the presence of picrotoxin in the dead body, for Giaconelli has described a ptomaïne closely resembling it both in physical characters and chemical reactions. The pharmacological actions would probably serve to differentiate them. Picrotoxin is allied to cicutoxin, the active principle of the water-hemlock, and to coriamyrtin, derived from *Coriaria myrtifolia*. These drugs stimulate the origins of the inhibitory fibres of the vagus, the vascular and respiratory centres, and the motor areas of the medulla oblongata. In its action on the secretions, picrotoxin is allied to pilocarpine and muscarine, and is antagonized by atropine and members of that group. The best antidote to picrotoxin is chloral hydrate.

DIURETIC ACTION OF THEOBROMINE AND DIURETIN.

Theobromine was first extracted by Wokressenski, in 1842, from cacao-seeds (*Theobroma cacao*). It was first employed in therapeutics by Boutigny, who attributed a tonic action to it. In the last few years, on account of the analogy between its composition and caffeine, a number of experiments have been made, principally by Gram, Schroeder, and Sée, with the idea of determining its physiological action.

Theobromine is a feeble alkaline base, with a slightly bitter taste, which does not undergo change in the air, even at the boiling-point. At 250° C. it commences to color brown, and undergoes sublimation at a few degrees higher temperature. Theobromine is scarcely soluble in boiling water, and less soluble in alcohol and ether. It combines with alkalies and sodium. Theobromine is obtained by solution of the base in caustic soda. It occurs then in the form of white deliquescent crystals, which are destroyed by carbonic acid. Its solution forms white precipitates by solutions of lead, zinc, and mercury. An ammoniacal solution of theobromine, after prolonged boiling with nitrate of silver, gives a granular and alkaline combination of theobromine and silver. If this combination of theo-

bromine and silver is treated with iodide of methyl, it can be transformed into the alkaloid caffeine, a fact which shows that theobromine is a lower homologue of caffeine.

Under the name of diuretin is designated a combination of theobromine with soda and salicylic acid, a combination which, according to Vulpius, possesses a pure diuretic action, without any action on the central nervous system, its diuretic property depending exclusively on the amount of theobromine present. Diuretin is thus, according to these authorities, a double salt, composed of sodium, theobromine, and salicylate of sodium. In the *Bulletin Général de Thérapeutique*, No. 30, 1890, Dr. Kouindjy-Pomerantz publishes an elaborate essay as to the diuretic action of diuretin and theobromine from experiments made under the direction of Dujardin-Beaumetz in the laboratory of Therapeutics in the Cochin Hospital.

These experiments show that diuretin should not be employed hypodermically, as the author has found that even when the most careful observance of antisepsis is employed that local abscesses are almost invariably produced. The experiments also seem to show that diuretin is much less toxic than caffeine; for while caffeine, in the dose of about ⅞ to 1 grain, killed a guinea-pig within an hour, 5 grains of theobromine produced no serious result. In reference to the action of caffeine, the author concludes that the citrate of caffeine acts both as a purgative and diuretic, and that its diuretic action is dependent upon the increase of blood-pressure, and is, therefore, contraindicated when arterial pressure is exaggerated. Caffeine reduces the contractions of the heart, and although caffeine rapidly increases the quantity of urine eliminated, this diuresis is of but short duration, as the patient rapidly becomes habituated to the remedy.

Finally, caffeine produces difficulty in urination, the act being accompanied by burning sensation in the urethra. The author believes that, as a diuretic, diuretin is preferable to caffeine, upon the following grounds:

1. Diuretin, in the dose of 45 to 75 grains, given in 15-grain doses every two or three hours, is an active diuretic, the action being much more marked than that of caffeine.

2. Diuretin acts directly on the renal epithelium, although the author states that there should be some hesitation in its employment in patients affected with considerable organic degeneration of the heart.

3. Under the influence of diuretin there is no change in the number of contractions of the heart.

4. Diuretin rapidly increases the quantity of urine produced, and the diuresis so produced lasts three or four times as long as that which follows the use of caffeine.

5. The patient does not become habituated to it.

6. The burning sensation which follows the use of caffeine is absent.

7. If diuretin is given in the dose of 45 grains a day it has no action on the nervous system. It should be given in milk or chocolate before eating. Theobromine and diuretin are said to produce good effects in cases of dropsy, provided the kidneys are not diseased, in which case no action is to be expected.

THE GALVANO-CAUTERY IN PURULENT OPHTHALMIA.

According to the Paris correspondent of the *Lancet* for September 20, 1890, purulent ophthalmia, when seen sufficiently early and before any ulceration of the cornea has had time to develop, will generally give way before the usual lotions and mild cauterization with nitrate of silver. The outlook may, however, be different when these cases are seen late, and when more or less extensive ulceration of the cornea has been set up; for their vision may be seriously threatened, if even the organ should escape total destruction. It is in such cases as these that M. Abadie has reaped admirable results from the use of the galvano-cautery. For instance, a lad of 20 came among the out-patients with his eyes in a lamentable condition, the result of gonorrhœal contagion. There was a history of three weeks' duration of this state of things. Both corneæ were extensively ulcerated, and so deeply that the anterior chambers were invaded, while even the iris had not escaped, but was infiltrated, and had the appearance of being covered with a grayish membrane. The conjunctivæ and eyelids generally were so involved that it was with difficulty the latter could be everted. The case being considered desperate, it was deemed useless to pursue the routine treatment. Rapid arrest of the destructive process was attempted by means of the galvano-cautery, which was freely applied to the suppurating surfaces, while the milder cauterization by silver nitrate was repeated twice daily. Eserine drops, as well as iodoform

insufflations, were from time to time had recourse to, while boric acid lotions were frequently applied. This was the sum of the treatment which was vigorously kept going for five consecutive days. At the end of this time quite a transformation was effected. The eyelids could be opened freely, the sclerotic was assuming a normal aspect, while the corneal defect was being rapidly repaired and the anterior chamber closed in. Then, after three months of further application of spray douches, the two corneæ had become so far transparent that a double iridectomy was undertaken after recovery, from which the patient was able to read average print, and has since resumed his occupation of stonemason. Another case was that of a man 58 years of age, who contracted a purulent ophthalmia, which owned a similar cause to the foregoing, but who presented himself the third day afterwards for advice. He was ordered the silver nitrate treatment for eight days, at the end of which time his eyes appeared out of danger. Milder lotions were substituted, but the patient, feeling himself, as he thought, altogether cured, was remiss in his attention to instructions, with the result that the whole mischief was rekindled, if anything more intensely than before, for the discharge became very abundant. This time, however, the application of silver nitrate was powerless to prevent the development of an extensive corneal ulceration, which progressed with such rapidity that the urgency for more energetic measures was evident if the cornea was to be saved from destruction. The galvano cautery was, therefore, applied for four days in succession, while the nitrate of silver and iodoform applications were kept up as in the previous case. Eserine was not used, as the anterior chamber was not here involved. In six days the ulceration was no longer visible. The patient is still under observation and the douche treatment. The cornea, which was saved from perforation, is opaque at the borders, but the centre is perfectly transparent, and vision is relatively good. The advantages of the galvano-cautery have already been shown in the treatment of perforating ulcers with hypopyon. The method of Sæmisch may be with advantage replaced by the cauterization of the ulcerated surface by penetrating with the galvano-cautery through the centre of the ulcer to the anterior chamber, and thereby readily liberating the hypopyon. In conclusion, it is claimed for the galvano-cautery, combined with the application of a two or three per cent. solution of silver nitrate, that it is quite possible to cure all forms of purulent ophthalmia, whatever may be their gravity, and that even in cases where the cornea may be seriously involved, and where, under older views and methods, it would be deemed as irrevocably lost.

USE OF CONDURANGO AND CONDURANGIN.

In an exhaustive study, emanating from the laboratory of Therapeutics of the Cochin Hospital, Dr. Guyenot is lead to the following conclusions (*Bulletin Général de Thérapeutique*, No. 32, 1890):

1. Condurango employed in the form of a powder appears to be remarkably efficacious in painful affections of the stomach, and especially in the case of gastric ulcer and irritation of the gastric mucous membrane.

2. Cases of cancer of the stomach, which have been claimed to be cured as the result of treatment with condurango, are certainly to be regarded as errors in diagnosis. In all probability the majority of them were cases of ulcerative gastritis.

3. Condurangin possesses an extremely curious and interesting action. It causes a veritable locomotor ataxia, which is due, without doubt, in view of its late appearance, to the formation of some toxic substance produced by the splitting up of condurangin in the organism.

4. In view of the fact that the chemical nature of condurangin is not yet thoroughly established, and its physiological action not being thoroughly understood, the bark of condurango should be employed in therapeutics, and not condurangin.

ANTIPYRIN AND BROMIDE OF AMMONIUM IN EPILEPSY.

Almost countless drugs and combinations of drugs have been used in the treatment of epilepsy, with the result that the various bromides, either singly or combined, have so far given the best results in relieving this distressing disease.

It is well known, however, that the bromides, when used persistently in large doses, cause various very disagreeable symptoms; therefore something which will be equally efficacious in lessening the number of epileptic seizures, and, at the same time, not cause these symptoms, is a desideratum.

With this end in view, various drugs—as

antipyrin, antifebrin, and bromide of ammonium—were separately tried in the Clinic for Nervous Diseases, University Hospital, with but indifferent results, until September, 1888, when Dr. H. C. Wood suggested the use of antipyrin and bromide of ammonium in combination.

Since that time Dr. Charles S. Potts states in the *University Medical Magazine* for October, 1890, that this mixture has been used with excellent results in forty-three cases of idiopathic epilepsy. In none did it fail to cause marked amelioration of the symptoms, and in some it gave relief when all the other commonly-used remedies had failed, and in none were any indications of bromism present, or any of the other disagreeable symptoms which antipyrin sometimes gives rise to.

THE ACTION OF CATHA EDULIS.

This plant, largely cultivated in the south of Arabia, tropical Africa, and Abyssinia, seems to possess many properties in common with cocoa and maté, although as yet all attempts to determine the presence of caffeine or cocaine in its leaves have failed, and although an alkaloid named katine is claimed to have been found in it, Flückinger's statements to this effect have not yet been confirmed by other observers. After the ingestion of catha edulis leaves a sensation of warmth is experienced in the epigastrium. The leaves have an astringent taste, and are very rich in tannin. Catha edulis appears to possess the property of suppressing the sensation of hunger, without, however, being regarded as an aliment, and in this respect is analogous with opium, kola nut, and guarana. In the *Bulletin Général de Thérapeutique* for September 15, 1890, Dr. Leloup contributes a long botanical, historical, and experimental study of catha edulis, in which he relates the results of experiments made upon himself and upon a number of individuals affected with various complaints. He states that, after its use, he has seen a number of persons under the influence of catha edulis able to go three days and nights without sleep and without experiencing fatigue. After its use also he has seen several persons, of even a most advanced age, accomplish severe exertion without fatigue, while he refers to three other cases in which violent migraine was cured by the use of the tincture of catha edulis. The author's cases are, however, reported with so much indefiniteness, and the results in some cases are so contradictory,—thus, in one case, it enables an individual to remain awake three nights in succession; in another, cures a case of insomnia,—that we can attach very little value to his conclusions. There can be no doubt, however, but that the leaves of catha edulis must possess some principle which possesses marked stimulating properties. As yet, however, all attempts to isolate it appear to have failed, and no reliable work has yet appeared to our knowledge as to the action of this substance or as to the cases in which it is indicated as a remedy.

ARISTOL IN AFFECTIONS OF THE SKIN.

Although aristol has been before the profession but a comparatively short period of time, favorable results, which quite confirm those recorded by Eichhoff, have been reported. It is in the treatment of cutaneous diseases that aristol has been most largely used. Aristol is a new iodine derivative of thymol, and is made by the addition of a solution of iodine in iodide of potassium to a soda solution of thymol. It is inodorus, and supposed to be a non-toxic, antiseptic remedy. Aristol is of a yellowish-brown color, decomposing on exposure to light, and should be kept in opaque bottles. It is insoluble in water and alcohol, except in excess; it is also insoluble in glycerin; it is readily soluble in ether, chloroform, and the fatty oils. Olive oil is generally used when an oil is desired.

In the *Medical Record* for October 18, 1890, Dr. D. F. Kinnier reports ten cases of various forms of cutaneous affections, in most of which this drug acted in a satisfactory manner. These cases comprise three of lupus, one of varicose ulcer, one of common psoriasis, one of tinea versicolor, one of erythema intertrigo, and three of venereal sores; in all of these the results are stated to have been satisfactory, with the exception of the latter, in which aristol in powder, solution, and ointment failed, and when iodoform was substituted the sores rapidly healed.

Aristol is useful in the treatment of ringworm, but there are more effective remedies. Good results were obtained by the use of aristol in cases of purulent otorrhœa with eczema auris. Brocq, who has had a large experience with aristol, recommends it highly as a topical application for ulcer of the leg, and, with absolute rest of the limb, considers the aristol treatment superior to the iodoform

treatment. Aristol in varicose ulcer of the leg brings about a more rapid cicatrix than iodoform. Aristol seems to have a special action in lupus, especially the ulcerating form, and is highly recommended by Brocq and Eichhoff, the latter claiming that it acts as a specific poison to the bacillus tuberculosis of lupus.

Whether aristol will replace iodoform in the treatment of skin-disease remains to be decided. Aristol has many points to commend its use over that of iodoform, one in particular being its freedom from odor.

Aristol being an iodine compound is supposed to produce toxic symptoms, especially if applied over a large surface. This doubt may be dispelled by an examination of the urine in cases where aristol has been used. Repeated examinations of the urine by Castani's method and the starch-paste test failed to give the iodine reaction. Both these tests are delicate and reliable, and iodine, if present in only a trace, will be detected in the urine. In psoriasis, aristol seemed to act well, but not so promptly as chrysarobin. There are many objections to the use of chrysarobin in the treatment of psoriasis which do not hold in the case of aristol, such as dermatitis, conjunctivitis, discoloration of the skin and clothing. Aristol is devoid of all the unpleasant symptoms and is worthy of a most careful trial in the treatment of psoriasis.

Dr. Brocq reports the case of a patient suffering from extensive superficial epithelioma of the face, which was almost entirely healed in three weeks by dusting with aristol. Aristol seems to act specially in bringing about cicatrization in obstinate ulcers, ulcerating lupus, and in superficial epithelioma. Cases of rhinitis, moist condylomata, specific ozæna, suppurating gummata, syphilis of the naso-pharynx have been reported where the use of aristol has been followed by good results.

Eichhoff suggests its use in local tuberculosis and constitutional syphilis by hypodermic administration.

THE PHYSIOLOGICAL ACTION OF COCAINE.

In the *Archiv für die Gesammte Physiologie* for October 1, vol. xlvii., Nos. 11 and 12, 1890, Dr. Ugolino Mosso publishes a long experimental essay as to the physiological action of cocaine, of which the following represent his most important conclusions:

Cocaine paralyzes the motor nerves and acts on the ganglionic cells of the spinal cord, as is evidenced by the fact that, although the cord remains in physiological connection with all the sensory nerve-trunks and endings, in poisoning by cocaine the sensibility only remains intact in those parts whose sensory nerves are connected with a section of the cord which has been protected from the action of the cocaine.

Dr. Mosso shows that cocaine cannot be correctly termed a poison for the sensory system in the same way in which curare is for the motor nerves, since he shows that in the advanced stage of poisoning, wherever arrest of respiration occurs, the animals are certain to die, and the sensory nerves still retain their function.

When the irritability of the nerve-centres of the spinal cord is depressed by the local application of cold, all reflex movements attributable to irritation of the sensory nerves disappear, even although voluntary movements may persist. The action of cocaine, therefore, in this respect offers nothing characteristic, since we may obtain the same effect through the action of cold on the nervous system.

In studying the local action of cocaine on the nerve-trunks, Dr. Mosso has found that when locally applied to mixed nerves cocaine prevents conductility of both the motor and sensory nerve-fibres.

When the great part of the spinal cord is protected from cocaine, sensibility disappears after motility, while centrifugal conductility of the cord is destroyed.

In doses of $\frac{1}{120}$ grain for every two pounds of body-weight of dog, cocaine exercises no influence on muscular contraction, while when given in doses of $\frac{1}{64}$ grain it acts as an irritant, and in doses of $\frac{1}{120}$ grain a paralysis results.

In studies made on the muscular system of man, Dr. Mosso has found that when 1½ grains of cocaine are administered by the stomach the muscles are able to accomplish a greater amount of work than in the normal condition. This result obtains solely when the cocaine is slowly absorbed by the gastric mucous membrane, for, if injected in large doses into the blood, cocaine first acts as an irritant and then as a paralyzant to the muscular system of man. On fatigued muscles the stimulating action is more marked than on muscles in the state of rest; while if given after a prolonged fast the stimulating action is still more marked, and the muscle, whose

power had fallen below the normal, is, under the influence of cocaine, then restored to above the normal degree.

Cocaine has been found by the author to increase the quantity of inspired air, from the fact that in small doses cocaine increases the chemical processes in the body; it, however, depresses these processes when given in larger quantities.

Cocaine in small doses produced marked contraction of the blood vessels in man, this result being determined by the author by plethysmographic studies made upon his own arm.

THE NATURE AND TREATMENT OF VERTIGO.

At the meeting of the Medical Society of Virginia, held September 2, 3, and 4, 1890, DR. LANDON CARTER GRAY read a paper on this subject (*New York Medical Record*, October 18, 1890). He said that an important generic distinction between vertigo of organic disease and that of a functional nature is that the former is attended by less irritability and apprehension on the part of the patient than the functional form. Kidney, heart, and organic liver troubles cause slight vertigo, lasting only a short time. In vertigo due to kidney-disease the headache sometimes disposes to hebetude or coma, occasionally convulsions; there may be œdema also. In vertigo of organic liver-disease there is usually some degree of hebetude, or jaundice, or dropsy. Vertigo due to brain lesions will prove pathognomonic. Thus cerebellar vertigo causes titubation, or one-sided staggering gait, or sudden semicircular whirling. According to Dana, temporal lobe lesions may produce like symptoms. Spinal lesions are not apt to cause more than slight vertigo; in locomotor ataxia dizziness may occur when the patient's eyes are closed. Middle-ear and labyrinthal diseases also cause vertigo.

But there is a chronic vertigo, varying from a sudden sensation of loss of equilibrium to dread of going about, often attended by symptoms of other nervous disturbance, such as tingling of extremities, fulness about head, usually felt most at the vertex, with slight aural ringing, mild insomnia, irritability, etc. It is most common in young and middle-aged adults, and is most frequent in northern climates in the first warm months of the year. In severe cases, even going from a cold into an overwarm room, will induce an attack. Neurasthenia is common. Tongue is usually unaffected, but there is generally an excess of uric acid or oxalate of lime in the urine. Hence Murchison gave to this symptom-group the name lithæmia. But Dr. Gray said many cases do not present evidence of liver-trouble; nor is there a standard by which to judge of an excess of uric acid in the system; and, again, cholagogues often aggravate the vertigo as well as nervous symptoms. He said that generally this peculiar form of vertigo is due to some chronic and persistent error of digestion,—either of the nitrogenized or starchy elements of food, or of both. Constipation, without coated tongue or foul breath, is common in this form of digestive disease. Predispositions to gout or rheumatism seem to cause such trouble; but the exciting causes of the vertigo are mental or physical overstrain, great anxiety, malaria, very sedentary life, etc.

Therapeutically, in those not having neurasthenia, he gives 20 drops of dilute nitro-muriatic acid, before meals, in a wineglass of water, and also 1 drachm of fluid extract, or 2 grains of solid extract of cascara sagrada three times daily, reducing the dose if it causes more than two feculent stools a day. Interdict all red meat diet. In about ten days the patient will feel better generally, but the vertigo will still be unaltered. Then stop the acid, and instead give the best pepsin and pancreatin,—pepsin immediately after meals, and pancreatin an hour and a half later. After a time gradually return to meat diet, but only once a day. In neurasthenic cases, in addition to this treatment, require the patient to take absolute rest—even sometimes in bed—for two or three weeks. It is better to err on the side of enforcing too much than too little rest in these cases. In so radically differing from others with reference to the treatment of this chronic form of vertigo, he has only to say that his experience has taught him to so differ.

In the discussion which followed, DR. WILLIAM W. PARKER agreed with Dr. Gray that the cause of the vertigo was mostly of a dyspeptic character, and hence a very rigid diet is the essential element of treatment.

DR. HUNTER MCGUIRE said that after a great deal of study of cases of vertigo of the chronic kind, so well described by Dr. Gray, he had come to the conclusion that they were typical of a form of lithæmia, and that they originated in some derangement of the portal circulation. He had noticed that if the liver keeps on acting well,—to use the common form of expression,—the vertigo does not

occur. Such inaction of the liver in these cases is not always manifested by the characteristic furred tongue, etc., for that may be red and moist, while the fæcal discharges may show a grayish or putty look. But there is always evidence of some form of gastric or bowel fermentation. He has derived benefit from a somewhat continuous use of cholagogue purgatives, so as to get two or three feculent actions a day, and then by the prolonged use of minute doses of bichloride of mercury short of ptyalism. He keeps it up, in doses of from $\frac{1}{64}$ to $\frac{1}{128}$ grain, three times daily, for a period of a month or more. Then he gives a perfectly neutral solution of *ex tempore* prescription of the hypophosphites of lime and soda. He is afraid to depend upon any of the prepared syrups of the hypophosphites on the market in such cases.

Dr. Isaiah H. White said that he was satisfied that the form of vertigo described is an expression of lithæmia, or else that it is due to some of the other products of waste which are not properly eliminated from the system. It is possibly due to the development of ptomaïnes.

Dr. Hugh Blair, of Richmond, Va., stated that he had long since come to the conclusion that the form of vertigo described is due mostly to lithæmia, and that lithæmia is but another expression for gout, and that it is all due to disordered fermentative digestion, due to the imperfect liver action.

ANTAGONISM BETWEEN THE MANNERS IN WHICH IODINE AND SALICYLATE PREPARATIONS ARE ABSORBED BY THE ARTICULATIONS, EXUDATIONS, AND TRANSUDATIONS.

Starting with the idea that the pharmacological activity of any substance has a direct relationship with the affinity of that body for certain definite forms of organic protoplasm, Rosenbach and Pohl have endeavored to determine what parts of the organism attract substances which are ordinarily designated as specifics, and which are known to pass very rapidly into the blood, no matter what may be their mode of administration. Iodide of potassium and salicylic acid were first investigated by these authors, and the results of their studies are published in the *Gazette Médicale de Paris*, October 11, 1890. The object of their research in this connection was to determine if these two substances, administered in the ordinary manner, passed or not into the principal serous cavities, articulations, pleura, or peritoneum.

The record of their experiments will best furnish a means of comprehending how their studies were conducted. Seventy-five grains of salicylate of sodium were given to a phthisical patient, who happened to be in an intensely febrile condition only a short time before death. At the autopsy the articulation of the knee was opened, and one drop of a solution of perchloride of iron dropped into it. This reagent caused the appearance of a pale violet tint in the synovia and synovial membrane. In order to still better determine the presence of salicylic acid in the joint, the other articulation of the other knee was likewise opened, and the synovial fluid carefully collected, boiled, and then a little hydrochloric acid added. After cooling, the decoction was shaken up with ether, the ether allowed to evaporate in the test-tube, and the residue dissolved in water, to which was added a few drops of a very dilute solution of perchloride of iron. A marked violet tint was immediately produced, showing the presence of salicylic acid.

Rosenbach and Pohl conclude from their studies—

1. That salicylated solutions are not only eliminated by the urine, but pass into the articular cavities, peritoneum, and pleura, as well when these cavities are in a normal state as when they are the seat of an exudation; consequently they are to be found almost invariably in simple transudations and also, though in less quantity, when the exudations are purulent. In this respect there is no difference in peritoneal or pleural exudations. But, on the other hand, it is impossible to find the salicylate of sodium in the saliva, in the gastric juice, in the intestine juice, or in the bile.

2. Iodated preparations administered by the mouth or subcutaneously pass into the urine and into the saliva; as is the case with the salicylated preparations, they are also to be found in liquids transudated under the skin, into the abdominal cavity or into the pleura, and this holds in affections of the most varied nature.

On the other hand, no traces of preparations of iodine are ever to be found in serous or purulent exudations. Thus, the presence of iodine has never been detected in the articular exudations, either in healthy subjects or in subjects of disease, even after the admin-

istration of large doses of different preparations of iodine.

3. Salicylate of sodium injected into an articular cavity, whether the seat of a liquid transudation or a purulent or serous exudation may be invariably detected in the urine.

4. When iodide of potassium is given in the same manner, the presence of iodine may be detected in a few moments in the saliva and in the urine, whether the articular cavities have been the seat of a serous or inflammatory exudation, or whether they are occupied simply by a transudation.

5. There thus exists between iodine and salicylate of sodium a fundamental difference, in that the second medicament, whatever be its method of administration, whether by mouth or by rectum, subcutaneously or directly into a serous cavity, is transferred in all directions by the liquids of the organism, especially into the serous cavities and in the urine, while iodine administered by the mouth passes into the urine and saliva, and never into the articular cavities, whether these are in a normal state or not, and never into the inflammatory exudation of serous cavities, such as the pleura and perineum.

The authors conclude from these facts,—

a. That the iodide preparations are completely inefficacious in cases of acute articular rheumatism, as well as in cases of serous or purulent inflammations of the pleura or peritoneum; for they never are carried to the seat of the morbid processes.

b. The salicylated preparations, on the other hand, deserve to be more employed in cases of articular rheumatism and in cases of serous pleurisy, since it has been established that a considerable quantity of these substances passes into the pleural cavity. It is evident, however, that in view of the volume of this large cavity large doses of the remedy are required, or it should be administered immediately after the puncture before renewed secretion takes place. It also would appear that the direct injection of the remedy after puncture possesses certain advantages. The authors attribute the favorable and rapid results obtained in a series of cases of exudative pleurisy of moderate severity to the association of thoracentesis and salicylated medication.

Finally, in doubtful cases the potassium iodide may be utilized to decide the question as to whether any given case is a simple product of transudation or inflammatory exudation. The experiments of the authors show that in the first case after the administration of iodine by the mouth the iodine may be found in the transudated liquid, but not in the inflammatory exudation.

EPSOM SALTS IN THE TREATMENT OF ACUTE DYSENTERY.

In the *Lancet*, October 4, 1890, Dr. A. W. Leahy writes that for quite a while he has been in the habit of using sulphate of magnesia as a remedy in cases of acute dysentery, and has been much impressed with the successful results which have attended its use.

The classical remedy for years past that has been almost universally prescribed in treating acute dysentery is, as is well known, powdered ipecacuanha. In India the treatment of dysentery by large doses of ipecacuanha is looked upon as the only certain and reliable method of treatment. It is claimed to possess all the benefits ascribed to blood-letting, without robbing the system of one drop of blood; all the advantages of mercurial and other purgatives without their irritating action, all the good results of antimonials and sudorifics without any of their uncertainty; all the euthanasia ascribed to opium without making, if not aggravating, the disease, while the mischief is silently accumulating within. Thus, it is claimed, we possess in ipecacuanha a non-spoliative antiphlogistic, a certain cholagogue and unirritating purgative, a powerful sudorific, and a harmless sedative to the heart and the muscular fibres of the intestines. While Dr. Leahy admits that ipecacuanha in the treatment of acute dysentery possesses many of these attributes and properties, there are, nevertheless, many objections which may be urged against the use of large doses of ipecacuanha in dysentery. The first is its depressing influence, kept up by nausea and vomiting; the second, it is liable to set up uncontrollable vomiting. These objections certainly are very serious ones, and, as they are in all probability of frequent occurrence, they must detract considerably from the value of this mode of treatment. The depressing influence of the drug when given in large doses is frequently seen, as is also the case where its administration is followed by violent and persistent vomiting, even to the extent of causing depression to an alarming extent. Further, when the vomiting occurs, it follows closely upon the swallowing of the drug, which, being thus ejected, is prevented from exercising its valuable effects on the diseased mucous membrane of the intestine;

while the patient's vital powers are depressed by the violent retching and vomiting, without any good impression being made upon the disease itself. Acute dysentery is in itself a disease accompanied by considerable nervous depression, and any remedy that tends to in any way increase this depression is objectionable. After observing a number of cases in which these unfavorable results were accentuated, Dr. Leahy writes that he commenced treating cases of acute dysentery with a saturated solution of Epsom salts. His attention was first called to the value of this drug in dysentery by Dr. Anderson, who called his attention to the statement of Bartholow that "the most efficient treatment of acute dysentery is by the administration of sulphate of magnesium. It is especially adapted to the acute stage, where there are fever, pain, tenesmus, and stools of mucus and blood. It lessens the hyperæmia and causes fæcal evacuations, with the result of relieving the pain and the distressing straining."

Dr. Leahy publishes a table of ninety-five cases treated in Hyderabad, all of them apparently being marked cases of dysentery. All the cases occurred among the poorer class of patients who seek relief at hospitals, and the vitality of many of them was at an exceedingly low ebb when they came under treatment. Out of the ninety-five, three died; two out of these three cases were stated to have been, at the time of their admission into the hospital, in a moribund condition.

It appears from his table that, on an average, two days' treatment with Epsom salts is required to produce disappearance of the dysenteric symptoms. The treatment subsequent to the production of this condition consists of an astringent mixture with opium. His method of administration is to take a sufficient quantity of sulphate of magnesium to saturate seven fluidounces of water, and to this saturated solution add one ounce of diluted sulphuric acid. The dose of this is a tablespoonful every hour or two in a wineglassful of water until it operates. Sulphate of morphine may be combined with it, or starch enemata with laudanum may be employed.

Dr. Leahy claims that in the earlier stages of dysentery this saturated solution of Epsom salts acts like a charm; fever, if present, disappears; mucus and blood are wanting in the stools, which become copious, feculent, and bilious; the tenesmus ceases; the patient's anxiety diminishes; the skin acts well, and sleep follows the administration of the first few doses. It is especially in the acute cases that sulphate of magnesium is so valuable; the more chronic the case becomes the less apparent are the advantages of this method of treatment. Dr. Leahy has ordinarily given a drachm of this saturated solution with ten drops of dilute sulphuric acid every hour or two until its effects became evidenced in the feculent character of the stools and their freedom from blood and mucus, or until the temperature has fallen, and the pain and tenesmus have ceased. When the stools have become normal in color and appearance, and the patient only passes two or three in the twenty-four hours, an ordinary astringent mixture of acid with laudanum or tincture of Indian hemp, or a pill containing extract of opium, is usually all that is necessary to complete the cure. It is, of course, imperative to diet the case with great care.

Dr. Leahy sums up the results of this treatment, as compared with that of ipecacuanha, as follows:

1. It has no depressing action on the system.
2. It neither produces nausea nor vomiting.
3. It quiets and soothes the patient.
4. Its physiological action on the mucous membrane of the intestines in relieving hyperæmia is sound, and by this means it probably prevents the formation of ulcers within the gut, places those which have already formed into a condition most favorable for their healing, preventing the acute inflammatory process and engorgement of the mucous membrane leading to the death of more tissue, and this bringing about a cure.

THE PHYSIOLOGICAL PROPERTIES OF HYPNAL.

In the *Bulletin Général de Thérapeutique*, September 30, 1890, Dr. Frankel publishes an elaborate experimental essay as to the physiological properties of hypnal, or monochloralantipyrin, from studies made in the Laboratory of Therapeutics of the Cochin Hospital. The following represents the author's conclusions:

1. Hypnal, or monochloralantipyrin, is chemically a perfectly definite compound. It is, however, less soluble than its components chloral and antipyrin, the latter separating when the product is placed in contact with a feeble alkali, and therefore occurs when this compound is introduced into the blood or intestine.

2. Hypnal has scarcely any taste, has no odor, and in this respect possesses considerable superiority over chloral, as rendering it much easier of administration, especially to children.

3. The properties of its components—chloral and antipyrin—are combined in this substance, and it is, therefore, a remedy which is both hypnotic and analgesic.

4. The chemical combination of chloral and antipyrin results in an increase of the hypnotic properties of the chloral by the addition of the influence of antipyrin on the nervous system.

5. Hypnal produces narcotic effects in doses of one-third less than is required of chloral.

6. Hypnal may be of great service in insomnia caused by pain.

THERAPEUTIC VALUE OF SULPHATE OF CINCHONIDINE.

Dr. de Brun, physician to the French Hospital at Beyrouth, has published (*Revue de Médecine*, September, 1890) the results of a large series of observations on the treatment of malarial affections with sulphate of cinchonidine. He was induced to give it a trial from considerations of economy, as its price is only about one-sixth that of quinine, the comparatively high price of which was a serious drain on the resources of the hospital. 1. In simple intermittent fevers of the tertian or quartan type he found it quite as efficacious as sulphate of quinine. Seventeen cases are reported, and in eleven of these the fever was cut short on the first day, in three on the second day, and in three on the third day. The temperature fell from the first, while the headache, sweating, rigors, insomnia, and other well-known symptoms were also much ameliorated. The doses and method of administration are the same as with quinine. 2. In chronic malarial poisoning, with enlargement of the liver and spleen, and in cases of remittent fever, cinchonidine was found to act quite as rapidly and efficaciously as quinine. The patients, as a rule, entered the hospital profoundly cachectic and anæmic to the last degree, with the typical appearance of persons suffering from malarial poisoning. The microscopic changes in the blood were also well marked. In a few days their whole condition improved steadily and regularly, appetite and energy returned, the face and mucous membranes lost their pallid tint, and the heart-murmurs disappeared. After one week of treatment many were so much improved that they refused to remain longer in hospital, the average stay being only twelve days. In one case with very profound anæmia the red corpuscles were only 1,780,000 per cubic millimetre of blood; six days later they numbered 2,480,000, and in sixteen days 3,560,000. At the same time the breaking down of the blood-corpuscles ceased. In three cases in which albuminuria was present it disappeared without special treatment. The other complications of malaria often met with were benefited in an equal degree. In those cases where the enlargement of the liver and spleen was due to simple congestion these organs regained their normal dimensions, but in others where interstitial changes and fibrous thickening had occurred an improvement only was observed. Twenty-three cases are reported, with full details. 3. In malarial neuralgia, and also in neuralgias supposed to be non-malarial, cinchonidine was found to be efficacious. 4. In certain cases where sulphate of quinine had failed, cinchonidine effected a speedy cure. Eleven cases are given in detail. After cessation of active treatment with cinchonidine, the patients remain for a long time in good health; they are also, in Dr. de Brun's opinion, more capable of resisting fresh malarial poisoning than after a similar course of quinine. He is also of opinion that cinchonidine should not be regarded merely as a substitute for quinine, but as a remedy having a distinct value of its own and superior in the treatment of certain cases to sulphate of quinine.—*British Medical Journal*, October 11, 1890.

THE ACTION OF CAFFEINE, MORPHINE, ATROPINE, ERGOTIN, AND DIGITALIS ON ARTERIAL PRESSURE.

Dr. Sophie Frenkel has conducted a series of clinical researches with the above remedies by means of the sphygmograph of Basch, and her results, which are about as follows, are published in the *Gazette Médicale de Paris* for October 11, 1890:

Caffeine administered by the mouth, in a daily dose of from 7½ to 12 grains, in cases affected with circulatory troubles, is apt to produce increase of arterial pressure and to accomplish therapeutic effects comparable to those of digitalis. The elevation of arterial pressure produced by caffeine is, as a rule, slight. It reaches its maximum intensity on

the second or third day, retains its height for one or two days, and then gradually declines, even in spite of the continuance of the remedy. The diuretic effect appears to depend in no particular on the elevation of pressure, for it may precede it and frequently outlasts it. Contrary to what has been determined by Binz, the pulse, Dr. Frenkel states, did not appear to be affected.

When benzoate of sodium and caffeine are injected under the skin, in doses of from 2 to 9 grains, increased arterial pressure is produced with remarkable rapidity; therefore the author recommends this dose administered subcutaneously as an admirable means of combating collapse in cardiac subjects and in various other pathological conditions.

Morphine, in subcutaneous doses of $\frac{1}{6}$ to $\frac{1}{2}$ grain, sometimes produces slight increase in arterial pressure, sometimes is without influence upon it, while but slight modification of the pulse is produced. It would thus appear that it is unwarrantable to regard morphine as a dangerous remedy in subjects of heart-disease, although it should be noted that the author's experiments, with one exception, in this connection, were made on individuals in whom the heart was perfectly normal.

Sulphate of atropine injected under the skin, in the dose of $\frac{1}{200}$ to $\frac{1}{64}$ grain, produced marked increase in blood-pressure, usually manifested after about twenty minutes or half an hour, which persisted for an hour or more. The pulse, as a result of this dose, is sometimes accelerated, sometimes the effect is variable. The quantity of urine secreted is not modified by this injection.

Under the influence of ergotin (Nienhans) intra-arterial pressure is elevated to about the same degree as follows the use of atropine within one or two hours, while at the same time the pulse is usually considerably slowed.

The experiments made by the author with digitalis on patients affected with cardiac lesions and disturbed compensation have furnished results which are concordant with experiments made before and which are already classic.

CARDIAC DISEASES.

At the meeting of the Hunterian Society, held October 8, 1890, Dr. Pye-Smith read a paper on some points in the "Prognosis and Treatment of Cardiac Disease" (*Lancet*, October 18, 1890). Dividing his subject into three heads, the author dealt with functional diseases, and with organic diseases unattended by changes in the valves in abstract only. In the latter category primary dilatation of the heart, well known to factory and army surgeons, was referred to overstrain in youth and young adult life, while the dilatation following specific fevers formed a distinct class, and was of graver prognosis. A case of recovery from ulcerative endocarditis was related, in which emboli had been observed in various arteries forming aneurisms. Under the third head, diseases depending on organic valvular changes, details were given as to the relative gravity of the various lesions. He instanced cases in which a slight form of pulmonary stenosis had allowed of patients attaining adult life; one lady was living over 50 years of age; next to this case was a young man who died at 24. In aortic obstruction much depended on the cause; in the senile form, fatal syncope was not uncommon. Mitral stenosis usually came under notice when regurgitation had been added, and the symptoms were then like those of primary regurgitation, but much less amenable to treatment. Degenerative sclerotic processes of later life were more dangerous than the rheumatic changes of youth. The completeness of compensation was to be judged of by general signs, easy respiration, etc., rather than by the amount of hypertrophy and dilatation present. In children the lesions developed were always rheumatic; there was very little danger of sudden death, and much less liability to dropsy; the aspect often suggested phthisis. In the later stages of all heart disorders mitral failure came on, and the cases got much alike. The prognosis was generally better for women than for men; the kind of life led was a great factor. Private practice yielded far better results than hospitals. Dr. Peacock stated six or seven years as the longest survival after aortic incompetence had developed; this was too short, and several cases were now adduced showing ten or fifteen years or more. As to life assurance, he thought a murmur should debar acceptance on any terms, unless it was found to be functional and disappeared in a few weeks; the risks were great. Treatment often had the most striking results in the worst cases,—*e.g.*, in waterlogged subjects, where digitalis, tapping of abdomen, or acupuncture of legs (preferred, on the whole, to Southey's tubes) rescued from the brink of the grave. The sitting posture in a high arm-chair often helped; water

gravitated to the legs. Strophanthus he had not found better than digitalis, but useful to replace the latter on occasion. Convallaria was quite inferior to either, but good for dropsical children. Hyoscyamus relieved pain; antipyrin was unsafe. Sulphonal in hot milk or with tincture of lavender was useful in restless conditions. Venesection might be used to subdue pain and to relieve the distended right side of the heart. He disapproved of Oertel's treatment by heart gymnastics, which were likely to disturb compensation.

THE TREATMENT OF DELIRIUM TREMENS.

Two questions arise in the formulation of methods of treatment of delirium tremens,—first, is there any specific remedy in this disease; and, second, should alcohol be admintered during the treatment?

At a recent meeting of the Society of German Naturalists and Physicians, held in Bremen, DR. AUFRECHT delivered an address on this subject, in which he offered the following solutions to the problems above mentioned (*Wiener Medizinische Blätter*, October 8, 1890).

The author stated that he had never seen any favorable effect follow the employment of opium or morphine, that he now only employed chloral hydrate, 60 grains being given towards evening in a mixture of simple syrup and syrup of orange-peel. He has usually found that on the very first day of treatment this remedy is capable of producing sleep. Nevertheless, he repeats it on the second and on the third evening, while on the second day a dose of 30 grains may perhaps be necessary in the morning and also on the fourth day, and perhaps even on several subsequent days. Under no conditions does he ever administer alcohol, and this also applies to morphine. From 1880 to 1890 he writes that he has treated two hundred and ninety-four different patients, and of these only ten died. Most of those which proved fatal had received morphine, while of the last one hundred and twenty-four which he treated only with chloral, none proved fatal.

His method is, when acute cases of delirium tremens are received in the hospital, to give half a pint of Hungarian wine in tablespoonful doses, or an aromatic alcohol mixture, consisting of alcohol, simple spirit, and aromatic tinctures, for the tonic effect. The average duration of time during which the patients remained in the hospital was a little over two weeks.

In the discussion which the reading of this paper evoked, DR. THOELE stated that he had unpleasant associations with chloral, and now never gave either it or alcohol. He now employed hot baths, of about fifteen minutes duration, followed by a cold douche, and noted that on the third night of this treatment sleep always occurred.

JÜRGENSEN, on the other hand, had employed even larger doses of chloral than recommended by Aufrecht, and had never seen any hurtful effects, and he referred to one case who was in the habit of taking daily nearly two quarts of absolute alcohol, and in whom he gave from one hundred and twenty to four hundred and sixty-five grains of chloral in twenty-four hours. He had also not entirely stopped the use of alcohol, which had been administered by him in the form of cognac, in order to avert the threatened pulmonary œdema and cardiac paralysis. He never, however, gave morphine; sometimes he also gave hydrochloric acid in addition to the chloral.

THE FREE ACID OF THE GASTRIC JUICE DURING DIGESTION.

VON JAKSCH (*Zeitschrift für Klinische Medicin*, Bd. xvii. p. 383) makes an interesting contribution to our knowledge of the above subject. He finds that free hydrochloric acid is present in considerable quantity as early as a quarter of an hour after the ingestion of food. The quantity depends on the character of the food, and usually reaches its maximum in from one to three hours. This increase, however, is not a steady one, but shows intermissions after the first hour and a quarter, hour and a half, or even two hours. It is always most rapid on a meat diet, slower on milk diet, and slowest of all on a pure carbohydrate diet. The greatest quantity of acid found in any one case—.1615 per cent.—was obtained on a milk diet (fourteen observations); slightly less on a meat diet, .1563 per cent. (eleven observations); and least of all on a carbohydrate diet, .1102 per cent. (ten observations). Digestion appears to be completed most rapidly on a meat diet, next in order coming carbohydrate and milk diet. He concludes that entire absence of free hydrochloric acid from the gastric juice, or its presence in traces only, during the first quarter to half an hour of digestion, is without pathological significance. If no free acid is

present one to three hours after ingestion of meat or milk, it is extremely probable that some severe disturbance of gastric function exists. On a carbohydrate diet, on the other hand, the presence of a mere trace of free hydrochloric acid is quite consistent with conditions of health. Furthermore, we are not justified in concluding that the presence of free acid in considerable quantity two to three hours after ingestion of meat or milk points to some pathological condition, as wide variations are possible within physiological limits.—*British Medical Journal*, October 18, 1890.

THE COMPARATIVE VALUE OF THE BINIODIDE AND THE BICHLORIDE OF MERCURY AS SURGICAL ANTISEPTICS.

At the meeting of the American Gynæcological Association, held September 16, 1890, Dr. Charles Jewett read a paper on the "Comparative Value of the Biniodide and the Bichloride of Mercury as Surgical Antiseptics" (*Medical Record*, October 11, 1890). The biniodide of mercury, if used in proper concentration, is as potent in its germicidal properties as the bichloride. It is less unstable as a chemical compound, is more agreeable to the operator, and it is less toxic. Experiments made at the Hoagland Laboratory justified the following conclusions: 1. In equal concentration the biniodide is slightly inferior to the bichloride in germicidal power. 2. The difference in the efficacy of a 1 to 1000 and a 1 to 2000 bichloride solution is insignificant. 3. The activity of a 1 to 2000 biniodide solution is materially greater than that of a 1 to 4000 solution. 4. For equal potency as a sterilizing agent the biniodide should be used in a more concentrated solution, say 1 to 1800. The use of alcohol before the sterilizing solution, by its hygroscopic action, gives a better result.

ADMINISTRATION OF MORPHINE BY THE NOSTRILS.

At the meeting of the American Rhinological Association, held at Louisville, Ky., October 6, 7, and 8, 1890 (*Medical Record*, October 25, 1890), Dr. Carl H. von Klein, of Dayton, O., read a paper on this subject. He said in the administration of morphine by the mouth there is generally, besides an appreciable taste, a great deal of hacking and spitting, in many instances to such an extent that it produces an irritation of the throat, especially of the soft palate. In persons not accustomed to its use it produces nausea and vomiting. Billroth reports the case of a lady, who took $\frac{1}{3}$ grain, in whom he saw such anxiety, nausea, and vomiting that, although suffering intense pain, the patient refused to take the remedy again. Dr. von Klein has administered morphine through the mucous membrane of the nose in over one hundred cases, with very satisfactory results. The manner of administering morphine through the olfactory canal is simply by snuffing it up the nasal chambers in the same manner as snuff tobacco is used. The dose is divided into two equal parts, each part being placed upon the end of the thumb and snuffed up into the nostrils. He has found this mode of administering it the most reliable, as it is tasteless, and the drug is more prompt in its action than when administered either by the mouth or hypodermically.

ANÆSTHETICS IN NATURAL LABOR.

Dr. Chaigneau has made a comparative study of the different anæsthetics which are employed in parturition, and his results are published in the *Journal de Médecine* for October, 1890. Although these agents are extremely numerous, attention need only be directed towards chloroform, chloral, antipyrin, and cocaine, as they are about the only ones given which it is warrantable to employ under these circumstances. Antipyrin, the author shows, has only given moderately satisfactory results; while it possesses many advantages, yet the inconvenience of requiring large doses, which are apt to prove irritating to the stomach and intestine, detract from its value. Chloroform, on the contrary, in the author's opinion, possesses so many advantages that it is surprising that it is not more frequently employed. He claims that it has no action on the delivery or on the production of post-partum hemorrhages, or on any of the conditions of the puerperal state. He maintains that it is indicated in all cases where suffering is excessive, where the contractions of the uterus are spasmodic or where there is a spasmodic contraction of the cervix, where there is placental retention from uterine contraction, or where there is a rigid perineum. The only contraindication to the use of chloroform is chloro-anæmia, with a tendency to syncope. He even maintains that acute or chronic pulmonary affections, diseases of the heart, kidneys, or of the

nervous system, need not interfere with the cautious administration of this anæsthetic.

Cocaine has been but little employed in such conditions. It may, however, serve to render great service in diminishing the pains which attend the passage of the head through the vagino-vulvar canal. The best results can be obtained if a five per cent. solution is employed, which may be administered on cotton tampons, allowed to remain for a few minutes, and then replaced by others. Such a procedure is even stated to accelerate labor, as, the suffering being less, the voluntary assistance rendered by the patient contributes towards hastening the termination; or a four per cent. ointment may be employed, also with apparently equally satisfactory results. It should be noted, however, that sublimate injections should not be employed simultaneously, as through their influence the alkaloid is decomposed and its properties are thus lost.

Finally, reference is made to subcutaneous injections eight or ten minutes before the expulsion of the head. These injections may be made directly under the labia, and prevent the violent pains which generally attend the passage of the head.

EFFECT OF CERTAIN SUBSTANCES ON THE RED CORPUSCLES.

M. Mayet, of Lyons, read an interesting paper at the recent meeting of the French Association for the Advancement of Science, in which he gave an account of the effects of various neutral salts and of chloral on the red corpuscles of the blood. Solutions of the strength of one or two per cent. of chloride of sodium, chloride of potassium, sulphate of sodium, phosphate of sodium, bicarbonate of sodium, and sulphate of magnesium, all at first temporarily destroy the elasticity of the corpuscles, and then dissolve or disintegrate the stroma. Solutions of the strength of five per cent. or more diminish the size of the corpuscles and harden them. The chloride of sodium has the most preservative primary action, but is most destructive on prolonged contact. As is well known, it has been recommended for washing the blood (in a .6 per cent. solution) in certain cases of poisoning. Sulphate of sodium has a great tendency to preserve the chemical properties of the corpuscles, but makes them much more rigid than does chloride of sodium. It is not suited for intravenous injections, but is very useful in the laboratory for washing the corpuscles before preparing hæmoglobin from them. For this purpose it is better than the three per cent. solution of chloride of sodium, which is commonly employed, but which has a considerable tendency to dissolve the corpuscles. Chloride of potassium has a great preservative action, but cannot be used for intravenous injections owing to its toxicity. Carbonate of sodium in weak solutions is very preservative. Phosphate of sodium in weak solutions renders the corpuscles rigid for a long time; it preserves their form well, and so is useful in diluting the blood for the purpose of counting the corpuscles. Sulphate of magnesium does not dissolve them, but changes their shape more than any of the other salts. Hydrate of chloral is very destructive to the corpuscles when it is in a concentrated solution, but not when it is of less strength than five per cent. Intravenous injections of the latter, which may be repeated several times daily, are very valuable in tetanus, in uræmic convulsions, to calm the violent spasmodic attacks in rabies, and in some painful diseases where hypodermic injections of morphine are inefficacious or badly borne. Of course the effects on the heart, respiration, and urine must be carefully watched.—*Lancet*, October 18, 1890.

DIETETIC RULES IN DISEASES OF THE DIGESTIVE ORGANS.

Dr. J. Boas (*Deutsche Medizinal-Zeitung*, No. 43, 1890) deals generally with the dieting of stomach and intestinal disorders. In considering diet in such conditions, three points must be looked to,—1, the constitutional condition and the state of nutrition of the patient; 2, the surroundings and customary habits of the patient. Thus, the dietetic treatment of the workman must be considered from another stand-point than that of the well-to-do; 3, the most important point is the prescription of diet with the actual disturbance of digestion in view. The stomach, for example, gets out of order in two of its functions,—the motor and the chemical; absorption in the stomach plays a very small part in the functions of the organ, so that an endeavor must be made (by the use of the stomach sound) to discover (1) whether there is a disturbance of the gland function, and whether there are fermentative processes going on; (2) whether the motor activity of the stomach is at fault; or (3) whether both these conditions are present. There are cases, for exam-

ple, in which the stomach seems incapable, owing to deficiency of gastric juice, of digesting proteids; in these cases the digestion of carbohydrates may be perfect. Proteids in these cases must, therefore, be given in a prepared or semidigested form (albumen, peptone). In these cases fat is digested with difficulty, or rather, is split up into fatty acids by the fermentation in the duodenum, and so does not enter the lymph-channels in the usual form of an emulsion of neutral fat. Sodium chloride is useful in these cases, since it helps to form the hydrochloric acid of the stomach, which tends to stop fermentative processes. On the other hand, there are cases where there is hyperacidity in the stomach. In these cases proteids are exceedingly well digested and carbohydrates but feebly acted upon, so that the digested forms, such as dextrines, malted foods, etc., have to be prescribed. For insufficiency of the motor activity of the stomach, enemata of half a litre, with a proper diet, are beneficial.—*British Medical Journal*, October 18, 1890.

THE ETIOLOGY AND TREATMENT OF TETANUS.

According to the Paris correspondent of the *Lancet* for October 18, 1890, at a recent meeting of the Academy of Medicine, M. NOCARD read a paper by M. Peyraud on this subject. M. Peyraud, having inoculated a number of rabbits with an infusion which he made from hay, says he was able by this means to bring on an attack of tetanus in fifty per cent. of the animals inoculated. The animals thus inoculated succumbed in the proportion of five out of every six. M. Peyraud has a theory that a chemical substance capable of exciting symptoms analogous to those caused by the invasion of the system by a given micro-organism will prove by inoculation to be a vaccine against the ravages of the microbe. He has applied this theory to strychnine, considered as the vaccine against tetanus. His method of proceeding was as follows: He injected hypodermically for a period of five or six days a dose of strychnine, varying the dose according to the size of the animal and the appearance of the convulsions. The animals being thus prepared, he inoculated them with pus obtained from an animal previously dead of tetanus. Ten of such rabbits were inoculated; but, in addition to these ten already prepared, he inoculated, as a controlling experiment, four others not previously protected by strychnine vaccination. The whole four non-vaccinated ones died and three of the ten vaccinated. The death of three of the prepared animals was attributed to a supplementary injection of strychnine which proved too strong. M. Nocard repeated these experiments by following a somewhat different method. He prepared a pure culture of tetanic bacilli from a lamb. Then he took ten rabbits and injected under the skin of each, for five days in succession, ten drops of a solution of sulphate of strychnine of the strength of 1 in 1000. He next inoculated the ten with his bacillary culture, controlling the experiment by at the same time inoculating ten untouched rabbits with the same culture. The result, however, was that they all died in from three to five days. He repeated the experiment with slight modifications, but the result was not less disastrous. The conclusion, therefore, was obvious.

COMMUNICABILITY OF DIABETES.

DR. RICHARD SCHMITZ (*Berliner Klinische Wochenschrift*, May 19) says that many years ago he noticed that man and wife occasionally were both diabetic. Up to 1880 he had met with eight such cases. Now he has observed twenty-six, and increased experience has taught him that quite healthy persons, without hereditary predisposition, may become suddenly diabetic after tending a diabetic for a long time, sleeping in the same room and living intimately with him, especially kissing him often. In no single case was there any hereditary tendency or any blood relationship between the parties, nor was there any known cause for the diabetes; the persons had neither eaten much sugar nor suffered from gout. He thinks this number—more than one per cent. of the whole—is sufficient to justify the inquiry whether some cases of diabetes may be communicated by very prolonged and intimate relations with a diabetic patient. He relates the following cases: 1. J. M., aged 48, diabetic for two years. Urine contained 1.5 per cent. sugar. After treatment this disappeared. He was attended by his strong and healthy wife. Two years later they both returned diabetic, the husband much in his former state; the wife very ill. She had been diabetic for six months; percentage of sugar, 4.5. She was aged 31, had been previously healthy, came of a healthy family, was not related to her husband, had not eaten

much sugar; in fact, all explanation of the origin of the disease failed. She died in four months. 2. F., aged 38, diabetes discovered a year before, but had existed longer. Percentage of sugar, 4. He died in four weeks. His healthy and blooming wife brought him to Neuenahr and nursed him. Two months later she complained of being diabetic; severe pruritus led to its discovery. She was aged 34, had been six years married, had two children, came of a quite healthy family, with no hereditary predisposition; was not related to her husband, had not eaten many sweets; in fact, no cause could be discovered. The sugar soon disappeared. Next summer she came again in the same state, but in a month the sugar disappeared. She married in the autumn of that year. She returned three years later with her second husband. The urine still contained a little sugar, but there was no wasting or pruritus. Her second husband was, however, diabetic. He was younger than his wife, 35, not related to her, of a healthy family with no hereditary predisposition, had not eaten much sugar, and had never been dissipated. Percentage of sugar, 4; which disappeared after five weeks' treatment. Schmitz has since lost sight of them. 3. L., aged 55, diabetic five years, was attended by his wife. She suffered from sciatica, for which her urine was examined and found to contain two per cent. of sugar. This disappeared four weeks later. She was 45 years of age, not related to her husband; no gout or diabetes in family, no previous serious illness, no abuse of sugar. 4. X., aged 45, had lived for a year with a dancer, whom he gave out as his wife. She complained of being thirsty, and this young woman, of 22, was found to have five to six per cent. of sugar in her urine. The family history was good, she had been always healthy, and had not eaten many sweets. She died soon after. 5. F. M. X., aged 30, diabetes discovered a year before; sugar, 2.6 per cent. She was tenderly nursed by a healthy husband, who suddenly was attacked by so-called gastric fever. He examined his own urine and found it contained four per cent. of sugar. The husband soon recovered on careful diet, but the wife died. 6. Miss S. had nursed a diabetic friend, who died at Cannes, on her way back to England from San Remo. She had scarcely left her day or night. Some months later she developed diabetes; sugar, five per cent.; great emaciation. No cause could be found for this, except the emotion due to the death of her friend. 7. A., aged 68, five years or more diabetic, two per cent. sugar. His wife, who was about the same age, accompanied him. A fortnight later the wife complained of weakness, and her urine was found to contain four per cent. of sugar. On careful diet this disappeared in three weeks. There was no hereditary tendency, she was not related to her husband, her previous health had been good, and she had not eaten much sugar.—*British Medical Journal*, October 18, 1890.

PASSAGE OF TUBERCLE BACILLI THROUGH THE INTESTINAL CANAL.

Some interesting experiments have lately been made by Zagari on dogs fed with tubercular food. These are interesting from two points of view,—first, that our knowledge of the action of the digestive juices on the tubercle bacillus is small; and, secondly, that tubercular processes as affecting the dog have been little studied. Dogs were fed on sputum which had been proved to contain large numbers of tubercle bacilli. After the course of from ten to twenty hours the bacilli were detected by means of the usual color tests in the fæces, and continued to occur for two or three days, occasionally five or six days, after the tuberculous material had been removed from their food. The dogs continued healthy and entirely free from signs of tuberculosis, although the sputum was mixed with their food for some time, and meat known to be tuberculous was also given. Experiments were now made to endeavor to ascertain what substances in the digestive tract prevented the growth of the bacilli. The bacilli found in the fæces were shown by inoculation on other animals to be virulent. It was also demonstrated that washings from the stomach also contained active germs. Although the food was allowed to remain in the stomach for three or four hours before being washed out, yet the organisms were not entirely destroyed. After six hours' stay in the stomach inoculations on guinea-pigs still produced tuberculosis, but their action was delayed. After from seven to nine hours a local infection only was the result, and after from eighteen to twenty hours no effects at all were noticed. An interesting point in connection with these results is that the gastric juice of a dog contains a higher percentage of acid than in man. As the analysis of the contents of the stomach did not explain why the dogs did not become tubercular, the further course

of the bacilli was next investigated. It was shown that the bacilli found their way out of the intestinal canal into the tissues, for the blood of the dogs was proved to be infectious,—that is to say, produced tuberculosis when inoculated; the same effect was produced by the lymph from the thoracic duct; also by portions of the liver, when introduced into the peritoneal cavity of a guinea-pig. When portions of the tissues were examined microscopically the result was negative. A few bacilli, however, were found in the spleen. When young dogs were fed with sputum they died, not of tuberculosis, but of a form of "intoxication." Further researches on dogs were then made with pure cultures of tubercle bacilli. When inoculated under the skin a local affection was the result, which usually ran a favorable course. When the injection was made into the pleura a local pleurisy and tubercular disease of the lung were produced which proved fatal. When intravenous injections were tried the results were again negative. The bacilli obtained from the fæces, as described above, although virulent, had lost some of their vitality. Pure cultures exposed to a temperature of 55° C. for eight days were not destroyed, while the bacilli from the fæces were killed after an exposure of five days. Again, if these bacilli were dried, after from sixty to ninety days they were no longer infectious, while Ichill and Fischer have shown that bacilli in pure cultures retain their virulency for a far longer period than this.—*Lancet*, October 18, 1890.

PHYSIOLOGICAL ACTION OF CAFFEINE.

DRS. SEMMOLA and MARCINE have recently concluded an elaborate series of experimental investigations as to the physiological action of caffeine, and their results, which are about as follows, are published in *La France Médicale* for October 17, 1890:

The dog shows a marked tolerance for caffeine. Three grains may be injected subcutaneously in a dog weighing only five pounds without producing any marked phenomena other than slight increase in the number of the heart's pulsations and increase in the vivacity of the animal and a tendency towards micturition and defecation. To apply these experiments to the proportion of a dose applicable to man, not only the body-weight must be taken into account, but the ratio which exists between the weight of the body and that of the central nervous system on which caffeine mainly exercises its action. Therefore in man the dose of caffeine should be three times as much as that which is required to produce an effect on the dog. Doses of 6 grains injected into the subcutaneous tissue of a dog weighing five pounds produced considerable increase in the frequency of cardiac movements and respiratory movements, with a diminution of cardiac pressure. Doses of 15 grains produce great excitement, which lasts for about two hours, the cardiac pulsations increasing in frequency, the blood-pressure diminishing. Gradually this action is succeeded by a reduction in the number of pulsations, with increase in blood-pressure and the amplitude of the cardiac systole. Large doses—30 grains or more—some minutes after injection produce muscular contractions of central origin, which finally pass into complete tetanus. The convulsions, however, gradually pass off, and only a state of great excitement and agitation remain. The heart first has its pulsations increased and pressure lowered, but soon the frequency diminishes to even below the normal amount and blood-pressure is increased.

The action of caffeine is principally exerted upon the nervous system, and, as the cardiac effects only appear later as the result of increasing doses, caffeine ought not to be included among the remedies which act primarily upon the heart.

Caffeine does not act upon the pneumogastric except in very large doses. Thus it is necessary in severe cardiac affections to administer large amounts of this drug to produce any effect, but the action on the pneumogastric nerve is to retard the effects of the administration of caffeine, though it is preceded by dilatation of the blood-vessels and increase in the vigor of cardiac systole. Caffeine produces marked irritation of the reflex apparatus of the spinal cord, while both the striated muscular fibres and the muscular fibre of the heart are stimulated by caffeine. In addition to the therapeutic indications already well recognized concerning the use of caffeine in heart affections, Professor Semmola writes that he has employed it with success in numerous affections of the spinal cord. Especially in central nervous disturbances of respiration he claims that its results are marvellous, and that caffeine is to be regarded as a powerful stimulant to the central nervous system in marked states of prostration, in infectious diseases especially, in relieving respiratory disturbances. Further, he claims,

that it is capable of relieving the nervous symptoms which so often occur in the course of diabetes mellitus.

THE ACTION OF EXALGINE.

According to the Paris correspondent of the *Lancet* of October 18, 1890, M. DESNOS has recently undertaken a series of researches on this new substance. He finds its influence on high temperatures to be very slight, while its action as an anodyne is, on the contrary, very marked. He insists, however, on the sensations, almost amounting to vertigo, which not unfrequently manifest themselves when the drug is administered under certain conditions. Sweating, often profuse, was also noted in many instances, often localized or most marked at the spot where the pain for which the drug was given had its seat. These drawbacks did not usually supervene except when the dose administered ranged from 50 to 75 centigrammes. With the latter amount very slight cyanosis, which often escaped observation, was developed. He finds that the alteration of the blood does not go the length of developing methæmoglobin, as has been asserted by Henocque, but there was a certain amount of destruction of oxyhæmoglobin. Generally speaking, this substance is well borne by the digestive organs, eruptions being rarely or never developed. The urinary secretion is usually diminished in quantity and gives chemical reactions, showing the presence of exalgine in considerable quantity, which goes to show that it is largely eliminated by the kidneys. As to dose, 25 centigrammes will sometimes suffice; 50 centigrammes, however, is an average dose, but as much as one gramme and a half may be given in twenty-four hours, in divided doses of 25 centigrammes. M. Desnos has employed this substance in facial neuralgias, especially of a congestive origin. In a case of ophthalmic zona one gramme and a half relieved the suffering, which was most acute. Cure was also soon brought about by means of exalgine in neuralgia of a syphilitic or anæmic origin. In intercostal neuralgia the relief obtained was not so satisfactory, while in that of the abdominal regions again the effect was good. In a severe case of sciatica the exhibition of one gramme and three-quarters during a period of three days completely removed the pain. It was also found of great service in a case of renal colic; while in tabes dorsalis it appreciably diminished the lightning pains. In short, exalgine is an important addition to the Pharmacopœia, and will be found of service in suitable cases, provided it is handled with ordinary care and intelligence.

Reviews.

DISEASES OF THE RECTUM AND ANUS. By Chas. B. Kelsey, A.B., M.D. Third edition. Rewritten and enlarged.

New York: William Wood & Co., 1890.

The fact of a surgical work, on a special subject, reaching a third edition within a decade is sufficient to determine the value of the book; it speaks in undoubted praise of the merit of the author's labor. In our notice of a former edition of Dr. Kelsey's work we then considered the book as a valuable addition to the literature of its special subject, and what was then said can only now be repeated with more emphasis. There has been considerable progress made in this branch of surgical practice during the past few years, and our author has not neglected to advance, but in all that is of any importance relating to his subject he has well analyzed, not hesitating to differ where, in his opinion, a difference is advantageous. Not only has the context been added to and rewritten, but there have been also added many illustrations, which will be found to assist greatly in the understanding of the text and in the performance of the operations, which may be necessary in the practice of rectal and anal surgery.

The chapter on fistula in ano is a most excellent one, more especially in reference to those very difficult and tedious operations in which there are present complications, such as multiple fistulæ, abscesses, and numerous burrowing sinuses; also the treatment of cases in which incontinence has been a result of the operation for fistula is well illustrated and fully described; indeed, it would seem, from the experience of the author, that there are no cases in which an operation may not be attempted, and few in which relief may not be expected. In cases of simple fistula in ano, the operation of cutting the fistula, of dissecting out the tract of the fistula, and then approximating the edges by means of deep sutures, is one which in our hands has so often given such good results that we would have its merits more emphasized than has been done in the book. Dr. Kelsey has well said, "If the attempt be successful, much

time will be saved, and if it fail, nothing is lost."

The chapter on hemorrhoids we turn to with considerable interest, since the frequency of this affection, and the recent discussions in regard to the best method of treating it, have given the subject more than usual attention. It is well to note that our author, in reference to the treatment of this lesion, has very decided views as to the result of treatment. He writes as follows: "The latter [the surgeon] can assure the sufferer that he may be cured at once and forever if he desires, and this applies to all forms of the disease." The methods of operation for the cure of hemorrhoids are said to be four in number,—viz., the ligature, the method of injection, the clamp, and the method of excision; other methods than these are not now considered worthy of mention. Of these procedures, Dr. Kelsey gives preference to the clamp and cautery. In our own experience, and we have had quite a number of cases during the past five or six years, we have been so well satisfied with this method that we are in perfect accord with him as to its results, and also as to its advantages over all the other methods. The operation of injecting carbolic acid, which in a former edition was so much praised, is now spoken of as follows: "In writing now I shall use less glowing terms than I did then, but I have by no means abandoned the practice." In other words, the cases must be selected, and those suitable are to be treated by this method. The objections to this procedure are given thus: "Pain, ulceration, marginal abscess, fistula. The impossibility of giving any definite prognosis as to the length of time necessary to effect a cure, or the amount of suffering the treatment will entail. The fact that the treatment does not result in a radical cure, but the tumors may reappear." It seems to us with such an array of objections, no surgeon, if he is convinced of their existence, would be justifiable in ever performing this operation. The operation of excision, or Whitehead's operation, is said to be "a naturally difficult, tedious, and bloody operation." This view of the procedure we can only accept in a relative sense,—that is to say, in comparison with some other operation for the lesion. That it is more difficult than the method of applying the clamp, no one will deny; that it is more tedious than this latter operation depends much upon the nature of the case; that it is more bloody may also be admitted; yet, after reading the objections made by our author, and many of them are well taken, we cannot but conclude that the operation of excision for hemorrhoids may, in selected cases, be the most desirable and give the best results. We believe it is an operation which has come to stay. What is yet to be decided is, when to perform it. The method is, like all other surgical operations for the cure of any lesion, and may have the rule applied to it that no operation is always suitable to every case, each case is to be judged by itself, and the method which seems best is the one which is to be employed.

The chapter on non-malignant ulcerations is a most excellent one, and in a very exhaustive manner goes over the various forms of ulcers which are liable to be met with in this locality, among which is classed that variety commonly known as a fissure; and the remarks of Dr. Kelsey, in regard to the treatment of this affection are so appropriate that we quote them: "There are many analogies between fissure of the anus and fissure of the lip, and early in my practice it occurred to me that tearing the mouth wide open would be rather severe practice for a cracked lip, and doing the same thing at the anus was unnecessarily severe for a fissure." A number of cases are given in which the results have been all that could be desired. The method employed by him has been to use mild means, and he has found that a weak solution of nitrate of silver (gr. v or x to the ounce), applied by means of a camel's-hair brush, combined with a light laxative, will heal the majority of cases in a very short time.

Venereal diseases of the rectum and anus are affections which, even at the present day, still remain open to discussion. Opinion is yet divided in regard to much that relates to this subject, and we have read this chapter of our author with much interest. Unnatural sexual vice as an etiological factor in these diseases must be admitted, but that it is practised in this country to the extent that French and German writers state it is in their countries we do not believe, and we are pleased to see that Dr. Kelsey is also of this opinion. Of the venereal diseases that may affect the rectum or anus,—gonorrhœa, chancroid, and chancre,—none are very common, but most authorities acknowledge that such lesions may occur. Dr. Kelsey says, "In my own practice I have never had occasion to suspect its existence but once, and then I could not be positive, the patient—a woman—denying any unnatural intercourse, and there being another explanation of the condition

equally good." The chancroidal ulcer is more often met with than the former affection, and generally due to auto-inoculation, or it may occur by direct contagion. Dr. Kelsey truly remarks, "And though they may be due to unnatural intercourse, their presence is no proof in itself of the vice." The initial lesion of syphilis,—the chancre,—our author writes, is not very uncommon, and if the writings of Péan and Malassez are consulted, this would seem to be a fact. Thus, they give "the proportion of one chancre at the anus to every one hundred and seventy-seven in other parts of the body in men, and the proportion of one in thirteen in women." This may be true of France, but we do not believe it can be said of this country; at least our experience does not reach any such proportions.

Of the remaining chapters of the book, that on stricture of the anus is particularly worthy of notice; also that on the formation and closure of artificial anus, in which the operations of enterorrhaphy and intestinal anastomosis are briefly but very clearly described.

In concluding our notice of the above work, we may say that we have not given as complete a review of the book as its value demands. Only a few of the additions to this, the third edition, have been noted, but, in a few words, to estimate the excellency of the book, we can congratulate Dr. Kelsey in being the author of one of the best works on diseases of the rectum and anus.

J. H. C. S.

ANNUAL OF THE UNIVERSAL MEDICAL SCIENCES. A YEARLY REPORT OF THE PROGRESS OF THE GENERAL SANITARY SCIENCES THROUGHOUT THE WORLD. Edited by Chas. E. Sajous, M.D., and seventy associate editors, assisted by over two hundred corresponding editors, collaborators, and correspondents. Illustrated with chromo-lithographs, engravings, and maps.

Philadelphia, New York, Chicago, Atlanta, London: F. A. Davis, 1890.

With the increased pressure of modern life, work must be done in a different way from that which answered very well twenty years ago. Take the multiplicity of divisions which have originated in medical science; the minute study fostered by division; consider even the immense increase in medical periodical literature, and one is at no loss to see why the practitioner can no longer study in the old-fashioned way. The city physician may belong to medical clubs, and possibly find time to look over most of the periodicals bearing upon the branch of practice which he affects, but even then the work is hastily done, the mind is scarcely impressed, the vital article is somehow omitted, and in the country it is virtually impossible for a man in this way to keep abreast of the times. Books are too slow in appearing, periodicals contain the work of the day, and give its history literally from day to day. Some may fall back on the self-satisfying thought that all the new work is useless, ephemeral novelty, and pursue the even tenor of their way, becoming daily more and more like the derisive appellation often bestowed upon them. Fossilized in brain, limited and more limited, till finally nature only completes the process by general extinguishment. For the others,—those real wonders of our medical age, the men scattered everywhere in sparsely-settled regions, as well as in crowded cities, who overcome all disadvantages and aim to know everything known,—the fact is only possible by the use of the modern appliances, of which the work before us is a splendid example. Annuals, retrospects, journals like the *London Medical Record*, all the pages in good journals devoted to recent progress in medicines, live transactions of live societies, these are the foods on which the active but isolated mind thrives and grows. Without some one to collect, extract, sift, analyze, arrange, the busy man and the useful man could never find time even to know what the medical world was doing, much less be incited to imitate, to invent, and excel.

To review a work like the "Annual of the Medical Sciences," in the ordinary way, would be as difficult as to review "Webster's Dictionary." All that can be done is to tell of its excellences, its methods, its editors. To begin with its editors, it has, besides Dr. Sajous, seventy associate editors, and these are assisted by over two hundred corresponding editors, collaborators, and correspondents. These figures give one some idea of the amount of work done. As to its methods, it is divided into sections; for instance, Section A treats of the lungs and pleura, and is edited by Dr. James T. Whittaker, M.D., assisted by others. In this section is comprised all the work of the year that is new, extracts from new papers, very extended in many cases, and so cited in the text as to be of easy reference if the whole paper is desired. The article begins with "Tuberculosis," and the compilation is arranged under the successive headings of "Etiology," "Invasion by the Alimentary Canal,—Food and Drink," "Invasion by the Lungs,—Sputum," "Infected

Houses," "Symptomatology," "Pathology, Dyspepsia, Studies of the Functions of the Stomach in Phthisis," "Lungs and Liver," "Arteries," "Conformation of the Chest," "Diagnosis," "Detection of Tubercle Bacillus," "Prognosis," "Prophylaxis," "Auto-infection," "Treatment,—Climate;" and then under each remedy which has been advocated we have extracts. This one instance will give the reader an idea of the fulness of the work, and its value not only to the practical worker but to the student and writer.

The value of the work, as will readily be seen from the above, lies in its extent and in the conscientious manner in which its editors have treated their task. Its five volumes, while formidable, perhaps, are none too extensive; there seems to be no padding. Whether in succeeding years so rich a harvest can be gathered from a year's work remains to be seen. Probably the editors will have to glean as well as reap, but for what they have done in the present edition we hope the profession will be properly thankful, and show their sentiments by supporting an invaluable work. E. W. W.

SCHEME OF THE ANTISEPTIC METHOD OF WOUND TREATMENT. By Dr. Albert Hoffa. Translated from the German by Aug. Schachner, M.D., Ph.G. Louisville, Ky.: The Bradley & Gilbert Company, 1890.

The above is a very convenient arrangement, for quick reference, of the antiseptic method of wound treatment. First are given the antiseptic means, which includes the formulæ of the different antiseptic powders, of the antiseptic solutions, of the antiseptic salves, of the antiseptic ligature material, of the antiseptic suture material, and the various drainage material; second, the aseptic operation; third, the antiseptic operation; fourth, the aseptic or antiseptic dressing; fifth, the special modifications of Lister's treatment.

FAMILIAR FORMS OF NERVOUS DISEASE. By M. Allen Starr, M.D., Ph.D., Professor of Diseases of the Mind and Nervous System, College of Physicians and Surgeons, New York. With illustrations, diagrams, and charts.
New York: Wm. Wood & Co., 1890.

This book presents a most pleasing exterior, simple and artistic, which suggests at once the peculiar attributes that characterize the intellectual work of its author,—a peculiar artistic neatness, which is, however, strangely at variance with the inaccuracy of the title-page in its relation to the contents of the book. In the first place, so far from the major part of the book being devoted to the "familiar forms of nervous disease," it is given over to the discussion of the most recondite and "uncommon" forms of nervous disease; and, in the second place, the volume is only in part the work of Dr. Starr, being, in fact, the conjoint production of Drs. Starr, W. W. Skinner, F. Peterson, and W. Vought. The book is very far from containing a complete survey of the diseases of the nervous system, and the subjects which have been chosen seem to have little or no connection with the title. Thus, the first one hundred and sixty-six pages are devoted to the study of the localization of the lesions of the brain and spinal cord. Then comes a chapter upon locomotor ataxia, followed by successive chapters upon chorea, epilepsy, etc., ending with a register of a list of the cases treated at the Vanderbilt clinic, and a sort of pharmacopœia of that clinic. We have read three-fourths of the book, and in this reading have been strongly reminded of the description in Scripture of the image, part of which was brass and part of which was clay. The chapters by Dr. Starr upon localization are carefully written, and show everywhere a thorough knowledge of the subject, while some of the other chapters are so weak as to be utterly unworthy of publication in anything except a primer of nervous diseases. We do not altogether agree with the roseate view of the value of cerebral surgery that seems to underlie the work of Dr. Starr. The rational hope of effecting anything in brain-disease by the use of the knife seems to us confined to a very narrow range of cases. Any one who wishes the latest discussion of cerebral localization will be repaid by buying the work of Dr. Starr, but the rest of the book, with the exception of a few scattered pages, seems to be chiefly of value as an advertisement of the Vanderbilt clinic. The pharmacopœia of that clinic, as here printed, would appear to indicate that modern therapeutic light had scarcely penetrated into such a remote corner of New York City. In their mediæval polypharmacy and total disregard of incompatibilities, chemical and physiological, some of these prescriptions are as interesting to the therapeutic relic-hunter as is Rothenburg on the Taube to the nineteenth century traveller wearied with the monotonous uniformity of modern cities. Two hundred and fifty years are said to have elapsed since the last brick was laid in that ancient burgh; but what can be said of mistura cephalalgica (heaven save the Latin!), in which one-eighth of a grain of

morphinæ acetus struggles with a third of a minim of spiritus ammoniæ aromaticus to maintain its pure existence, and then in hopeless degradation herds with one and a half grains of chloride of ammonium, one-twentieth of a grain of citrate of caffeine, half a fluid-drachm of elixir of guaiana and aqua menthæ piperita galore?

QUIZ COMPENDS, No. 12. A COMPEND OF EQUINE ANATOMY AND PHYSIOLOGY. By Wm. R. Ballou, M.D., Professor of Equine Anatomy, etc., New York College of Veterinary Surgeons, etc. With twenty-nine graphic illustrations selected from Chauveau's "Comparative Anatomy."

Philadelphia: P. Blakiston, Son & Co., 1890.

Next to the knowledge of man as an animal the knowledge of the horse is most useful to the physician. Since the successful physician or surgeon is the nearest modern representative of the mythological Centaur in the intimacy of his relations with and dependence on that noble animal, the work of Dr. Ballou, while intended for veterinary students, will prove of considerable value to the medical man, and will furnish him with much useful knowledge in convenient and easily-remembered form. Its method of question and answer will be of advantage to him, equally with the student of the veterinary schools, in enabling him to retain many facts connected with the anatomy and physiology of the animal which does so much in enabling him to make his living, keep his engagements, and do his life-work without dying of fatigue before he fairly begins.

E. W. W.

THE NEUROSES OF THE GENITO-URINARY SYSTEM IN THE MALE, WITH STERILITY AND IMPOTENCE. By Dr. R. Ultzmann. Translated by Gardner W. Allen, M.D., etc.

Philadelphia and London: F. A. Davis, 1889.

With the growing attention paid to the diseases of the female generative organs, and with the increasing tendency to relieve female diseases by radical and surgical procedures, it may seem strange that analogous male diseases are not the subject of equally thorough investigation. Probably with the growth in the next decade of a competent body of female practitioners and surgeons something more will be done for the relief of the hitherto neglected sex. Before many years we may hear of divulsion of the prostate for spermatorrhœa, and removal of the testis and cord for sterility. Who knows what changes may be taking place in those organs preparatory to the advent of the surgical woman? We have now high authority for the statement that the old-time sexual disorders of the female are vanishing, or have vanished, giving place to the remediable pyo- and hydrosalpinx, that hysterical joints are an extinct disease, like the dodo among birds, and that even ovaries are not so painful, that the suffering sexual system has found a way to cry out through the trumpet-shaped extremities of the tubes, and can be heard and answered. Now and then somebody, other than the advertising quacks, pays some attention to the male sexual system. Dr. Ultzmann does, and has given us another treatise, following the old, beaten path. Electricity is the special treatment advocated, and very careful directions are given about currents and poles. The author attacks the bug bear of spermatorrhœa valiantly, both with electricity and the "psychrophor," which, interpreted, means the "cold sound." Urethral suppositories and liquids by syringe are also recommended.

The author's study of sterility and impotence seems to add but little to the knowledge already in print on these subjects. He gives some cases of his own of considerable interest, but little or no novelty. The book, however, is to be commended for its purely scientific character, and for the absence of any attempt to pander to the curiosity of the non-medical reader.

E. W. W.

PRACTICAL, SANITARY, AND ECONOMIC COOKING, ADAPTED TO PERSONS OF MODERATE AND SMALL MEANS. By Mrs. Mary Hinman Abel. The Lomb prize essay.

Published by American Public Health Association, 1890.

The perfect cook-book has not yet been written. With horror we think of the seventy essays which the Lomb prize called forth, and with added horror and acute gastric pain, of the fact, so innocently stated by the examining committee, that the present volume was so superior to the other sixty-nine that no second prize was warranted by the excellences of any of them. What instructive or destructive reading would they have made if only printed as curiosities. For it cannot but be admitted, we think, that the "prize essay" by no means comes up to the ideal standard. It has merits undoubtedly. It is scientific, and the author has studied recent physiological chemistry to good effect, but she lacks the sense of how to make the simplest dishes tasteful, and she lays but little or no stress on the method of serving food, which so often, if properly done, gives an increase of appetite, where seasoning alone

would fail. Her bills of fare, for their price, are too same and unattractive, and her range of edibles seems strangely enough to have no representative of the fish foods, which are certainly valuable enough to deserve mention. Think of a book on sanitary and economic cooking which fails to mention the oyster and clam at all, as far as we can discover, and whose author, for all we can gather from her work, thinks that fish-balls (cod) rather than fishes swim in the sea and are caught with a hook, the only mention of fish being fish-balls, of various sorts and kinds.

On the question of the utilization of soup-meat and its nutritive value she is all right, but one is struck in reading with the extreme paucity of articles of food when prepared for the table. Then, too, the prices of her fare-bills are by no means so low as one would expect from their tame and simple characters. Families living upon her thirteen-cents-per-head-per-day diet would experience a sort of remittent starvation, with occasional surfeit, while the eighteen-cents-per-day people, whose bills of fare, for some occult reason, are "not given in detail," would perhaps envy them, since they would not be sure what to eat. But the twenty-three-cents-per day swells, who have such breakfasts as oranges, milk-toast, and coffee, and such dinners as roast mutton and potatoes, corn-mush with sugar and milk, and wash them down with soda cream, and sup on parsnip soup with yeast dumplings, bread and butter, sponge-cake and tea, after suffering from dyspepsia, notwithstanding the chemical accuracy of their diet, and paying the doctor and apothecary, might be glad after all to fall back upon diet No. 1 with its cheapness, simplicity, and solidity. Certainly some good ideas, especially about bread-making, can be gleaned from the Lomb prize essay, but hardly enough to make it a complete and desirable guide.

E. W. W.

Correspondence.

BERLIN.

(From our Special Correspondent.)

The Congress of German Naturalists and Physicians, or rather the annual session of the Society of German Naturalists and Physicians, was held in Bremen. In accordance with an old custom, it had been determined—and rightly, too—not to omit this gathering, although the session of the International Medical Congress had been held a short time before in Berlin. The meeting of this Society was a success, and, although the number of participants present were less than at previous meetings in Germany, there being present, however, twelve hundred and sixty-one members and five hundred ladies. This was caused by the fact that former attendants were now seeking recreation elsewhere, after the severe strain they had undergone during the summer, not only in study and practice, but also in their attendance upon the Congress in Berlin; while others had to devote themselves to their customary vocation of attending to the sick and the study of science. When Von Hoffmann, in consideration of his advanced age, begged to decline the honor of a re-election to the presidency, Professor His, who, up to the present time, had been filling the vice-presidency, was elected to fill his place; and, at the same time, Professor Quincke, of Kiel, was appointed to the position made vacant by him. Halle was announced as the place for the next session of the Society.

During the course of the general meetings, therapeutics was rather secondary to other scientific themes, which latter were the principal subject under discussion. The whole attention of the audience was completely riveted by a medico scientific essay by Rode, who forcibly advocated the sea-shore for the treatment of scrofula and the early stages of consumption. As the Society accepted the invitation to the management of the baths at Moderney, there was thus given them an opportunity of being convinced of the efficacy of the sea-life itself, as well as of that of children's hospitals and cheap boarding-houses, for the sake of making life at the sea-shore possible to a larger number. Even more important did the discussion of the treatment of the earlier stages of consumption seem just now in Germany, when the attention, not only of medical but of all other scientific men, is concentrated upon this subject by the impulse given to it by Leyden, who, next to the doctors themselves, was the warmest advocate of resorts by the sea-shore for the treatment of phthisis, because only in its beginning is it curable, and also because the lives of so many are dependent upon its being recognized and properly treated from the first.

The spirit of inquiry that has lately been developing in expert circles has produced some wonderful changes in our opinions in regard to hygiene. Our views have altered, not only in regard to the prevention, but also to the treatment, of disease, and most radical

changes have occurred in the method of erecting and managing hospitals. One that may be cited as an example of this fact is the recently-completed public municipal hospital in the southern part of Berlin. This is so perfect in its construction without and in its management within as to seem incapable of improvement. The hospital consists of eleven departments, one of which, with sixteen beds, is reserved for patients with diphtheria. There is also a building for surgical operations, and such additions as are necessary for the management of the institution,—such as kitchens, bath- and store-rooms, an engine-house, and dead-house. All the lighting is done by electricity, produced by machinery, which is run by steam from the engine-house. Real fire is seen no where but in the latter building and in the laboratory, for in the kitchens steam is used for cooking, keeping the food warm, and heating the water to wash the dishes. During the day two large machines are in operation for furnishing the electricity, and besides this, according to Tudor's system, there are accumulators, which, in case of an accident to the machinery, would be able to carry on the work for a while. Moreover, during the night, this matter is so arranged that the sleep of the patients will not be disturbed by its noise. While after dark eight incandescent lights spread cheerfulness in each one of the wards, half of each one is during the night covered by a shade. Moreover, it is possible to increase or lessen each one of these burners separately. In the halls and operating-rooms this system is superseded by the arc lights. This is the first hospital that has departed from all other means of lighting but by electricity. Again, the means and apparatus for the application of electrical therapeusis is connected with the central electric system, so that a supply is always ready.

Heating the building is also done from a central system by means of hot water or steam in the common engine-house, and thence conducted through subterranean passages to the cellar of each building in which there is a heat-chamber. In case of the buildings that are heated by the hot water, the latter is warmed in the heat-chamber, and thence conducted by pipes to the separate rooms.

The subject of ventilation has been very carefully thought out. The air from a room, which is practically out of doors, is conducted into a space, where it is filtered through gauze, and, through subterranean passages, is thence conducted to the warming-room, where it is heated to a temperature of 20° C. Through this means there is a continuous supply of fresh air. The warm air is let into the rooms by registers close to the floor, while the removal of both hot and cold air is regulated by traps situated between the windows. In the upper floors the removal of the air is accomplished by sky-lights, which can be regulated by obliquely-fitting transoms, easily operated by a cord. In each ward there is an anemometer to show whether the ventilation is all right. The entrance of a draught of fresh air from the outside on either the patients or attendants is thus perfectly prevented. In the larger pavilions there are, leading from the basement to the garrets, elevators, which are used not only by those that are ill but also by convalescents in the upper stories to whom walking down-stairs is disagreeable. Each pavilion contains for each ward, in addition to the dining- and wash-rooms, together with the apartments of the attendants, a sitting-room for the patients. This is intended for the use of such patients during the day as are not confined to bed, as well as for surgical cases and convalescents. All the pavilions are connected to one another by a walled subterranean passage. This is light and roomy, lit up by the incandescent lights, and serves for many purposes. It contains the pipes used for heating and ventilating, and in part serves to protect the conduits of the electricity for illuminating purposes. By this means, in case of an injury to the pipes or their contents, the location of the trouble can be easily located, and, in case of an accident to them, they can be fixed without troubling any but the part concerned. Besides, dead bodies can be moved through it from the cellar of a pavilion to the house where they are examined, so that the rest of the patients are spared seeing the corpses removed. All the pavilions, except the one situated in the midst of the others, and for the treatment of diphtheria, are connected together by covered passages whose walls on the outside are windowless, so as to keep out the noise of the street; but they open on the garden of the hospital, so that in bad weather the patients who are not under any restraint in regard to their management can enjoy the fresh air without exposure. The customary arrangements of hospitals, such as are seen in the wards, their being provided with beds and tables for the individual patients are perfected according to the most recent laws of hygiene. The management of the operating-room is under the direction of the chief of the surgical department, Werner-Korte. In it the walls and floor are kept as clean as possible.

Buffets heated by steam make it possible to keep the instruments constantly disinfected with boiling water. There is a smaller operating-room, with its own instruments and simpler outfit of appliances for operations of a septic or offensive character. In the upper story of the building are dried and kept bandages from the raw material, after their sterilization in a large Rietchel-Henneberger apparatus. In the dead-house there are laboratories, provided with all the modern appliances for the anatomical, chemical, pathological, as well as bacteriological examination and study of the subjects. This is under the management of Albert Frankel, the chief of the inner department. The washing and drying of clothes is done by steam. All the pavilions are connected by telephone with the main building.

BERLIN, October 12, 1890.

PARIS.

(From our Special Correspondent.)

Depopulation of France—Why does Blood coagulate?—Physiological Properties of Oil of Sweet Flag—Therapeutic Value of *Cassia alata*—French Use for Chinese Hair.

The depopulation of France, the paramount question of the moment, has occupied the Academy of Medicine for several sittings, and it was eminently proper for the guardians of public health to look squarely at the facts, and if possible to devise some remedy for such an alarming state of affairs. Yes, not only is French natality decreasing, but the rate of decrease shows but little sign of improving. On the contrary, it has become worse during the past few years, except the last,—1889. Without going into long arrays of figures, suffice it to say that in 1889 the number of births was very nearly the same as in 1888, slightly less, though. At the same time mortality greatly decreased. So that, on the whole, there was an increase of population, and some hope that the years 1887–88 saw the lowest point, and improvement may henceforth be expected. Yet this low rate of increase places France in a dangerous state of inferiority towards her not very friendly neighbors. Dr. Lagneau, who was the first in the Academy to start the ball in motion by a rather sensational report, proposed as a remedy quite a series of fiscal and economic reforms but little short of revolutionary. Dr. Javal, next taking up the subject, attributed the scant natality to voluntary abstention provoked by the whole system of legislation. For instance, the civil code, by indicting a compulsory division of all estates, real and personal, equally between all the children, has caused land-owners, big and little, to limit their progeny to one or two heirs. The system of indirect taxes which enhance the price of all articles of food, also acts as a premium on small families. Again, the military law bears very hard on large families, and more so in proportion than on smaller ones. On the other hand, the absurd French custom of giving to daughters large marriage portions makes it as undesirable for parents to have girls as to have boys in large numbers. French parents are, like others, ambitious for their children. They want to see them happy and above themselves in social position. To attain this result the shortest way is to limit the number of the offspring. Like Dr. Lagneau, whom he somewhat sharply criticised, Dr. Javal recommended a whole set of new laws and regulations, which would also subvert the existing order of things, in a different manner though. As may be expected, Dr. Lagneau replied and defended his pet projects, when Dr. Rochard closed the discussion by remarking that preparing bills or enacting laws is scarcely the business of the Academy of Medicine. Besides, a tax on bachelors is hardly practicable, and it would be unjust to discriminate against childless couples, already distressed enough at the sight of a barren household. Hygiene and sanitation are the means within the province of the Academy. "We cannot increase natality, but we may decrease mortality which levies so high a tribute on infantile population. While it is true a limited progeny is often voluntary, the same is also too often due to natural causes. It is of no use disguising facts, barrenness is on the increase. If we produce but few children, we must manage to save of what we get all we can. And here is a wide field for both the legislator and the sanitarian. Infantile mortality is much too large; there is no reason why France should be less saving of her children than more prolific nations. Professional abortionists must be prosecuted without mercy. Unwedded mothers must be protected. Foundlings must be tenderly cared for. And, lastly, typhoid fever and other preventable diseases must not be allowed to decimate our young men in the army and our population in the cities and villages."

Dr. Rochard is no doubt right. However, the same partial census also supplies other curious information. From the marriage statistics for 1889 it appears that English (and American) men and women are of all foreigners most in-

clined to marry their French neighbors. Indeed, figures say they like a Gallic mate four times better than one of their own nation. The Germans and Belgians show a like preference for natives, but to a lesser extent,—that is, about two to one. With them, as with Anglo-Saxons, the rule holds good for both sexes. Italians behave differently, the men taking French wives seven times out of ten, and women taking a native husband only four times out of ten. Spaniards are more clannish. We find among them five French wives and four husbands out of ten. They mostly marry among themselves. A strange fact is the very small number of unions between Spaniards and Italians,—namely, only seven of each sex out of a grand total of over four thousand marriages in 1889 for the two nationalities. As to the Swiss, they hold very broad ideas; they divide their favors almost equally between all nations, with a preference for French natives, and next for their own.

An important contribution to our knowledge of the nature of blood has been made by M. Maurice Arthus, of the Sorbonne physiological laboratory, and Dr. Calixte Pagès. To place the cart before the horses, their practical conclusions are that "(1) blood will not coagulate unless it contain soluble calcium or strontium compounds; (2) all salts apt to precipitate lime, such as soluble oxalates, fluorides, and stearates, will prevent coagulation; (3) calcium is an integrant part of the fibrin molecule." Now, to briefly relate the experiments serving as a basis for the foregoing conclusions, the first series of trials with potassium, sodium, and ammonium oxalates and fluorides showed that one per mille of the oxalates and one and a half the same quantity of fluorides are sufficient, when added to blood, pure or diluted, to prevent coagulation under all circumstances. The mixture, of course, will on keeping spoil more or less speedily, according to temperature and other conditions, but remain liquid. Sodium oleate, or common soap, both good lime precipitants, were found to act likewise. Only the proportion necessary was one per cent., as might have been expected from the high chemical equivalents of stearic and fatty acids in general. Another series of experiments proved that oxalates and fluorides will even stop incipient coagulation, provided the blood be either diluted with water, or under such conditions as not to be liable to sudden coagulation. Moreover, oxalates, fluorides, and stearates will precipitate neither fibrinogen, paraglobulin, or fibrin ferment, all of which substances have hitherto been considered not only necessary but also sufficient to insure blood coagulation. And, lastly, the most conclusive series of experiments proved that if to blood previously rendered non-coagulable by the presence of one per mille of an oxalate as little as one per mille of calcium chloride be added, the liquid will coagulate within six or eight minutes at a temperature of 20° to 30° C. (68° to 86° F.), and form clots in every way resembling ordinary clotted blood. It is an interesting addition to our knowledge of the physiological properties of strontium, alluded to in the THERAPEUTIC GAZETTE (September, 1890, page 639), that of all the alkaline earths strontium alone is apt to replace lime under the same circumstances. Strontium chloride, like calcium chloride, will render "lime-less" blood coagulable again, while barium and magnesium salts will not. Indeed, with a few more observations in the same line, we shall soon reach the conclusion that strontium could without disadvantage replace calcium in the animal economy. From the foregoing experiments the investigators have also deducted the following theoretical conclusion: "Under the influence of fibrin ferment, and in the presence of soluble calcium compounds, fibrinogen undergoes a chemical transformation resulting in the production of an insoluble calcium combination,—namely, fibrin." This explanation, they hope, will reconcile the hitherto irreconcilable theories of both Al. Schmidt and Hammarsten, who have also worked in the same field.

Drs. Cadeac and Meunier, continuing their investigations on the various essential oils used for flavoring cordials and bitters, have communicated to the Paris Society of Biology the results of their experience with the oil of sweet flag,—*Calamus aromaticus*. In doses of 25 centigrammes (4 grains) injected into the veins of 5 to 6 kilo (11 to 13¼ pounds) dogs it was found to cause epileptic fits. The effects may be quite as violent as those obtained with oils of hyssop, rosemary, or wormwood, but they appear less abruptly. When the access is over, the animal takes some time before recovering its mental equilibrium. Its temper will be quite altered. A gentle dog will become ugly and cross, unmindful of its master, and ready to snarl and bite on the slightest provocation. Larger doses—1.80 grammes to 16 kilos, or 2.80 grammes to 30 or 35 kilos—will produce a succession of epileptiform attacks, ending in tetanus and death. The oil is eliminated very slowly, and death generally proceeds from nervous exhaustion. With smaller doses—namely, 70 centigrammes to 20 kilos (11

grains to 44 pounds—only nervous tremors and jerks were observed, but no epileptic attacks. When the dose still decreases, for instance, 50 centigrammes to 13 or 17 kilos (8 grains to 29 or 37 pounds), the effect is a wholesome psychomotor excitement. The animals are more lively, inclined to play, run, and leap, and at the same time more nervous and excitable. Such were the different modes of action, according to doses, observed with intravenous injections of oil of calamus. The following appear to be the conclusions deducible therefrom: 1. Oil of calamus aromaticus in large doses has powerful epileptic and tetanic properties. 2. In smaller doses it is only a stimulant, increasing strength without causing ebriety. 3. It always impairs the affectionate disposition of animals, and renders them unruly and stubborn. 4. It has a special affinity for the nervous system; hence it forms an excellent nervine, but may become dangerous in cordials containing excessive quantities.

The *Cassia alata*, called by George Don, F.L.S., winged-podded cassia, and in the French tropical colonies known as tetter-plant (*herbe-aux-dartres*), has been tried with great success in the military hospital at Noumea, New Caledonia. Navy Pharmacist-Principal Porte, who directed the experiments, having in 1879 found chrysophanic acid in the plant, managed to procure some seeds, and to grow them in New Caledonia, where army physicians Bonnafy, Le Dantec, Legrand, and others employed preparations of *Cassia alata* in many cases of obstinate herpetic affections under treatment at the Noumea Hospital. Eczema of the face, simple herpes, intertrigo, herpes circinata, and chronic eczema, all very tenacious diseases in warm climates, and some of long standing, were invariably cured after application of a *Cassia alata* ointment devised by Pharmacist-Principal Porte. Having noticed that chrysophanic acid is insoluble in water, sparingly so in alcohol, but quite soluble in acetic acid, he made an acetic tincture, and then an extract, of the fresh leaf, as follows:

> *Cassia alata* leaves, 100 parts;
> Crystallizable acetic acid, 150 parts;
> Distilled water, 300 parts.

Bruise the leaves, exhaust them by maceration, press out the liquid, and evaporate it on a water-bath to the consistence of an extract. The average yield is thirty-seven per cent.,—a very large one. The ointment is to be made by mixing the extract with four times its weight of lanolin. In mild cases, or with more delicate patients, half the quantity of extract will suffice. It may be interesting to add that for his work on *Cassia alata* M. Porte has been rewarded by the official thanks of the Minister, published in the *Journal Officiel.*

The British consul at Canton, China, recently caused quite a sensation by stating that during the past year some eighty thousand pounds of human hair, worth about sixteen hundred dollars, were shipped through that port to Europe. At the same time he remarked that most of the hair in question coming from beggars, criminals, and victims of contagious diseases, it was a wonder to him how elegant European women can consent to wear such appendages. But, so far as France is concerned, an unexpected reply has been returned to the Anglo-Chinese sanitarian. Chinese hair, it seems, is too coarse for French beauties, and in consequence not wanted for female adornment. It is merely used for the helmets of cavalry officers. For privates in the dragoon or cuirassier regiments a flowing mane of ordinary horsehair is considered the right thing. But officers need something a little better and finer, and Chinese hair has been found to just answer the purpose.

TRADE-MARKED AND PROPRIETARY MEDICINES.

To the Editor of the THERAPEUTIC GAZETTE:

DEAR SIR:—Physicians connected with large hospitals on this continent (and I presume that my statement may be applicable to the hospital chiefs of your country) are often solicited by the proprietors of certain new medicines, and especially of such as have become the possession of a monopoly, and have been patented, to consider the claims of their particular preparation, make trials of it in their hospital practice, and give the results to the world. I am not aware that the enterprising pharmaceutical firm ever goes so far as to accompany their request by a *cash presentation* to defray the expenses of such trials, but the offer to furnish ample supplies gratuitously of the medicament is sufficiently common. While I do not know that there is anything contrary to social or medical ethics in such offer, or in its acceptance, I have myself always fought shy of these pharmaceutical agents, nor have I accepted their proferred supplies, from fear that the reception, without pay or charge, of a quantity of an expensive drug, for use in my hospital, might somehow bias my judgment as a clinical experimenter. Judge, therefore, of my indignation on re-

ceiving intimation from an American source that my conduct had been different in the case of antipyrin. I am told that this is a mere rumor, the parties from which this rumor emanated being unknown to my correspondent, but I think it none the less important that my life-long principles in matters of this kind should be known to my friends across the water. So firm have I been in refusing all offers of supplies of new drugs for hospital experimentation, that the inventors and proprietors of new preparations have long since ceased to visit me.

I opine that there is not in all France a more determined opponent of the patented pharmaceutical specialties than I am and have been. As for antipyrin, I have always fought the monopoly which makes this really valuable antipyretic and analgesic so costly to us all, and in the discussions before the Academy, and in the report which I had the honor to draw up, I indicated how we might escape this *draconian* tyranny and abuse by substituting for fanciful appellations of these drugs, such as antipyrin, antifebrin, phenacetin, exalgine, etc., the scientific, or rather chemical, names of these substances. I have had some little part in researches made with the view of discovering new analgesics and new hypnotics, but I would consider it a reprehensible and criminal act to obtain a government patent or a monopoly of anything which I might be instrumental in discovering of real value to suffering humanity.

It is much to be desired that such truly excellent remedies as antipyrin and sulphonal might be manufactured under a new name by some enterprising pharmacist, and I, for one, would engage never to use the trademark name or preparation again. Let medical men be united in opposing monopolies, as well as all *duties*, where valuable drugs are concerned. I remain, dear sir,

Your obedient servant,

DUJARDIN-BEAUMETZ.

PARIS, FRANCE, September 24, 1890.

RARE COMPLICATION OF WHOOPING-COUGH.

To the Editor of the THERAPEUTIC GAZETTE:

DEAR SIR:—In the THERAPEUTIC GAZETTE, xiv. 567, Dr. W. P. Ellis reports a case of a "rare complication of whooping-cough." It appears that this case has awakened considerable interest, and justly so. From the brief description given I would infer that the tumor was due to air. From the fact that it came on "during a paroxysm of coughing," "no discoloration of the skin," "no pain, and no inflammation disappearing after death," all favor this conclusion. In 1883, while attending Dr. Edward Henoch's lectures on diseases of children, in the Royal Charité of Berlin, I saw a case of whooping-cough complicated with rupture of pulmonary tissue, which was followed by subcutaneous emphysema of the neck, face, trunk, upper and lower extremities; indeed the entire body appeared to be inflated with air; slight fever was present, with extreme dyspnœa, that greatly intensified the suffering of the little patient, which, however, proved fatal in twenty hours.

H. F. SLIFER, M.D.

NORTH WALES, PA.

Notes and Queries.

THE FUTURE OF PHARMACY.

On the eve of the publication of the addendum to the British Pharmacopœia, which will take official cognizance of what is already well known, it is very interesting to find that pharmacists have recently been receiving rather a large share of advice from several members of our profession. Some of it has been directly addressed to them, and some has been in the form of criticism of the ready reception so eagerly afforded to new drugs. The character of the advice seems to be conflicting and perplexing, and yet, although detached sentences appear to show a difference of opinion, we believe that on careful investigation the divergence will be found to be much less than even the speakers themselves would suspect. In all the three addresses we propose noticing here, vigorous onslaught is made upon new remedies,—one, because they are often secret and so partake of quackery; another, because the rage for new drugs is absolutely fatal to accuracy of observation and precision in treatment; and the third, because no sooner is a new drug placed on the market than everybody rushes to try it. Mr. Lawson Tait's amusing life-history of "rubbishin" was no doubt very little overdrawn, but his conclusions against new drugs as the "great burden" of our lives scarcely seem to be justified by his fanciful sketch. Dr. Broadbent, while more guarded in his statements, was no less severe upon the rage for new drugs which seemed

to have taken possession of the profession. "When the drugs were recommended simply by an advertising chemist, it was humiliating to see their statements command general acceptance." In spite of Dr. Broadbent's cautious reservations, his remarks and those of Mr. Lawson Tait might well be understood to discountenance progress, and to discourage all original work outside the comparatively limited circle of familiar remedies. On the other hand, Sir E. H. Sieveking, in his address at the opening of the School of Pharmacy, spoke quite as emphatically upon the need of greater energy, perseverance, and research. He remarked that within the last few years we had been indebted to the continent for numerous remedies which have been employed largely and beneficially in this country, but have not been discovered here. Curiously enough, he instanced one—chloral—which had previously fallen under the ban of Mr. Lawson Tait; Sir E. H. Sieveking considered it a matter for regret and for serious consideration that so much of the progress of modern pharmacy should reach us from foreign sources. If they attend to such advice at all, pharmacists might well hesitate how to frame a satisfactory line of conduct. They are urged forward by Sir E. H. Sieveking; they are told practically to work in the old grooves or not to work at all by Mr. Lawson Tait. Is all research to be paralyzed from the dread of its results receiving the appellation of "rubbishin," or are eager investigations to be continued on the lines followed abroad? If pharmacists be induced to follow Sir E. H. Sieveking's advice, may they not lay themselves open to the charge of being "advertising chemists" when their results are published, and when they attempt to reap the reward of their labors? In our department, headed "Pharmacology and Therapeutics," we publish the experience of practitioners and observers in all parts of the world with respect to the action of well-known drugs, and endeavor to afford aid to our readers in forming an estimate of the value of remedies recently introduced.

The difficulty seems to reside chiefly in a misapprehension of the meaning of terms. In speaking of the *value* of any new drug, it is well to distinguish carefully between its therapeutic and its financial value. The latter may be, and indeed mostly is, dependent upon certain purely business considerations, such as the constant presentation of an easily remembered name in attractive advertisements, but the therapeutic value of a remedy is not necessarily antagonistic to its financial value. In other words, although advertisement may push into notoriety many relatively worthless substances, it cannot detract from the activity of the many possessed of valuable therapeutic properties. Whether it does more harm than good is another matter. Certainly many medical men instinctively withhold their confidence from new remedies, and the more they are pressed upon their attention the more they feel the dread of being entrapped by another fashionable craze. Still, to take only those mentioned by Sir E. H. Sieveking,—chloral, antipyrin and its congeners, and sulphonal,—it may be safely asserted that these have survived their period of probation, but it is none the less true that each in turn has run the risk of being designated "rubbishin." The truth appears to be that undue haste in the publication of results, and undue eagerness to claim priority, will always discredit original research in any direction, and this truism applies most particularly to new remedies. An energetic worker in original fields makes what he believes to be a genuine discovery, and the new substance is immediately dubbed *anti-something*. Subsequent impartial investigations show, perhaps, that the original claim is as incorrect as the hundred other uses to which the remedy has been hastily applied, and then its fate is sealed. False to its name, false to the statements of the many who have welcomed it purely as a novelty which could be utilized for their own especial hobbies, it is speedily relegated to the limbo of useless matters. Frequently, we believe, this fate is undeserved, and might have been averted by a little more circumspection. There is, no doubt, a disinclination to reinvestigate a substance which has had its day of fashion. It is cast aside in favor of newer combinations, and its properties may have to wait a long time for recognition. Nearly every pharmacopœia has shown indications of curious waves of fashion, of prejudice, and of tardy justice. Remedies pass in and out of the official circle almost mysteriously; the exit, often the result of a temporary lack of appreciation, no more proves the uselessness of a drug than the frequently prolonged hesitation about its admission. It is simply set aside for further work, like a candidate referred to his studies, and if it is of any real worth it will go on presenting itself at intervals of varying length until the knowledge of its power to do good work appears beyond dispute.

The whole question of the future of phar-

macy lies in a nutshell. New remedies are not to be decried simply because they are new; they are not necessarily useless because they are advertised, but they frequently receive less than their meed of attention, simply and solely because the first statements concerning their powers are made prematurely. Although for a moment Dr. Broadbent spoke so strongly of the advertising chemist, the whole tenor of his argument is in entire sympathy with Sir E. H. Sieveking's wish that the future of research should be more firmly based upon slower methods. It is only by investigations which must be both painstaking and prolonged, and by careful consideration of every possible source of error before publication, that pharmaceutical results can leave little room for sarcasm and none for scorn.—*Lancet*, October 18, 1890.

MISSISSIPPI VALLEY MEDICAL ASSOCIATION.

The meeting of the Mississippi Valley Medical Association at Louisville, October 8–10, was largely attended and successful in every particular. The President, Dr. Jos. M. Matthews, of Louisville, had been ill for some weeks from blood-poisoning, the effects of a wound received some time since, and was able to preside only at a part of the sessions. The Vice-President, Dr. C. R. Early, of Ridgway, Pa., filled the chair in his absence. Dr. Matthews made a short address of welcome, expressing the disappointment he felt at not being able to meet with them in session and socially, and bidding all welcome to the best the Falls City could give them. The chairman of the Committee of Arrangements, Dr. I. N. Bloom, was a host in himself, and Dr. Matthews's illness threw double work on his burdened shoulders. An addition to his family arrived two days before the meeting, and he had not had time to assure himself whether he was receiving congratulations for a boy or a girl. The programme of eighty papers was completed in the three days by rigid adherence to the limit rule for readers and discussion. Dr. John A. Wyeth's address on the evening of the first day delighted a large audience. He graduated at the University of Louisville, was on his native heath, and was the recipient of numerous social honors. A reception for the members of the Mississippi Valley Medical Association and ladies, with the local profession, was given by Drs. Yandell and Roberts, and was highly enjoyable. The visiting ladies were taken to the Blind Asylum, and entertained by songs, gymnastic exercises, etc., by the pupils. A large reception at the Galt House called forth the famed beautiful Kentucky women, and a number of bachelor doctors cast longing looks behind them when they left the city and its belles. This reception was followed by a banquet given the visiting members by the Louisville members with invited guests. The feast of body and reason lasted far "beyant the 'twal," and the two hundred and forty guests departed feeling that it was good to have been there. The officers for the coming year are: President, Dr. C. H. Hughes, St. Louis; First Vice President, Dr. J. H. Hollister, Chicago; Second Vice-President, Dr. S. S. Thorn, Toledo; Secretary, Dr. E. S. McKee, Cincinnati; Treasurer, Dr. C. F. McGahan, Chattanooga; Chairman of Committee of Arrangements, Dr. I. N. Love, St. Louis. The next meeting will be held in St. Louis the third week in October, 1891.

URIC ACID IN THE BLOOD.

Sir A. Garrod showed some years ago that during an attack of gout the blood contained appreciable quantities of uric acid. Abeles and Saloman have corroborated these experiments. In the *Deutsche Medicinische Wochenschrift*, No. 23, of this year, Professor von Jaksch, of Prague, whose valuable researches on the blood are well known, publishes an interesting paper on the occurrence of uric acid in the vital stream. He considers mainly two points,—1. Whether uric acid takes a prominent part in the "acid intoxication" described by himself, Peiper, and others. 2. Whether it is only in attacks of gout that uric acid occurs in the blood. The blood was tested by Salkowski's and Ludwig's method, which Jaksch considers to be very accurate. The total number of patients on whom observations were made was one hundred and five. In nine cases of perfectly healthy individuals no trace of uric acid could be detected, neither were there any xanthin derivatives present. In nervous affections, such as tabes, multiple sclerosis, polyneuritis, and tumors of the brain, the results were also negative; on the other hand, in such cases, the blood frequently contained compounds of xanthin, especially hypo-xanthin. Nine of the one hundred and five cases were patients suffering from enteric

fever, but uric acid was never found in the blood; in one case, however, in which the temperature had fallen small quantities were discovered. In a case of irregular intermittent fever the results were analogous; during the febrile attack no uric acid could be detected, but in the intervals it was present. Diseases of the liver, intestinal tract, and stomach only led to "uricacidæmia" (as Jaksch calls this condition), when there was profound anæmia. Uric acid was found in the blood in cases of heart-disease in which there was much cyanosis. In affections of the lungs and pleura it was most frequently detected in emphysema, and when there was pleural exudation. It occurred constantly and in considerable quantities during the febrile stage of pneumonia (five cases). In acute rheumatism it was never found. Fair quantities were present in renal disease,—the different forms of nephritis, amyloid degeneration, etc. Considerable amounts were also observed in cases of marked anæmia, both primary and secondary. With regard to the second question, therefore, Jaksch comes to the conclusion that uricacidæmia is not pathognomonic of gout; as to the first question, he concluded that uric acid is not often found in febrile "acid intoxication," but that it may be so. It is important to notice that all morbid processes leading to overloading of the blood with carbonic acid also produce this condition, and the greater the cyanosis the more uric acid is found. Therefore, it would seem that we must ascribe the presence of uric acid to a disturbance of the interchange of gases in the lungs, such as occurs so largely in pneumonia. How are we to reconcile with this statement the occurrence of uric acid in the blood in nephritis and anæmia? To this question Jaksch answers that in both these diseases the red blood-corpuscles, whose duty. it is to further oxidize uric acid, are deficient He concludes by making the general statement that uricacidæmia is due to disorders of the red blood-corpuscles, the vehicles by which oxygen is carried.—*Lancet*, September 27, 1890.

A NEW THEORY OF SEA-SICKNESS.

According to M. ROCHET, who accepts the view that sick-sickness is due to cerebral anæmia, this condition is induced by the disorder brought into muscular contractions by the organism not being accustomed to such sudden movements as those on board ship. He insists upon the enormous capacity of the reservoir formed by the muscular and perimuscular venous system, and the considerable *rôle* of tonicity and voluntary or reflex muscular contractions in emptying it, also the predominance of reflex over voluntary muscular actions in preserving one's equilibrium in most movements. In the movements of a vessel the relation of muscular tonicity and suppression of reflex movements result in a considerable increase in the capacity of the peripheric reservoir, and the consequence is to intensify the resulting cerebral anæmia. Hence it is that the downward motion of the ship is the most trying, and one can easily understand the benefit of a horizontal position, compression of the abdomen, and fixing the body in a rigid position. Many young children escape sea-sickness because the education of the reflexes is not yet accomplished. On solid ground their equilibrium is so uncertain that they often reel as much as older people do on board ship. M. Rochet discountenances recourse to anæsthetics or soothing drugs, but looks rather to muscular excitants, and, above all, to voluntary movements, which afford a compensation for the absent reflex movements. He accordingly recommends strychnine, ergot, and gaseous drinks. We give this advice for what it is worth, but it does not strike one as more promising than the thousand and one theories and treatments that have preceded it.—*Medical Press and Circular*, October 15, 1890.

KERATIN.

DRS. UNNA and BEIERSDORFF recommend that pills coated with keratin, or capsules made of this substance, should be employed when drugs are prescribed which irritate the gastric mucous membrane, and the administration of which is liable to induce vomiting, such as preparations of digitalis and squills, salicylic acid, or iodide of iron; also when substances are given which neutralize the acidity of the stomach, or which in any way impair its activity, such as acetate of lead, tannin, nitrate of silver, alkalis, etc. An outer coating of keratin is also desirable when prescribing drugs that are required to act on the intestinal mucous membrane without affecting that of the stomach, such as extract of logwood, tannin, or the salts of aluminium. Finally, keratin is most valuable when substances are given with the object of destroying worms, but which, if introduced in

the ordinary way into the stomach, undergo absorption to such an extent that they are liable to set up alarming symptoms, while at the same time their vermicidal action is reduced. Keratin is obtained by treating shavings of buffalo-horn with ether, alcohol, and an acid. Its special property is that it is insoluble in the contents of the stomach, but readily so in those of the intestine after the pancreatic juice has entered.—*Lancet*, October 18, 1890.

ATROPINE AS AN ANTIDOTE TO POTASSIUM CYANIDE.

In the *Internationale Klinische Rundschau* for August 31, 1890, a case is alluded to of a man who attempted to commit suicide by taking a considerable (?) quantity of a solution of potassium cyanide. To render the result more fatal he also drank at the same time a solution of atropine. He became unconscious, and was then taken to the clinic in Halle, where, it was stated, that nothing was done for him, but he, nevertheless, the next day was entirely well.

Of course, there being no accurate details as to the quantity of these different substances taken largely detracts from the importance of this case, as pointing to an antagonism between atropine and potassium cyanide. We would infer that the amounts taken were insufficient to produce death, since the asserted antagonism of atropine was disproved by the experiments of Keen, Boehm, and Knie.

BONDUCIN AS A FEBRIFUGE.

The oily fruit of *Guilandila bonducella* and of *Cæsalpinia bonduc*, known as the sugar-pea of Guiana, contains a bitter, resinous principle, which may be extracted by alcohol. When the alcoholic extract is treated with chloroform and the chloroform then shaken up with water, the lower layer, which then separates, contains this bitter principle, which, after evaporation and washing by means of petroleum-ether, may be obtained in the form of a white, bitter powder, soluble in alcohol, chloroform, acetone, aceticacid, and the fixed and volatile oils. It is but slightly soluble in ether and bisulphide of carbon; it is almost insoluble in water and petroleum-ether.

This bitter principle, to which the name of bonducin has been given, is soluble in hydrochloric acid, in which it assumes a red color. With sulphuric acid a red color is also produced, especially when a drop of perchloride of iron has been added.

According to the *Journal de Médecine de Paris* for October 12, 1890, this substance has been used with success in intermittent fever in the dose of from 1½ to 3 grains. The powder of the seeds may be administered in doses of 15 to 30 grains daily.

CASE OF STRYCHNINE-POISONING.

In the *North Carolina Medical Journal* for September, 1890, Dr. W. H. Cobb states that he was recently called to attend a woman, aged 42 years, who had accidentally taken two capsules containing strychnine, presumably about two grains in each, which had been obtained about sixteen months previously to poison a dog.

When Dr. Cobb reached the case the woman was then in violent tetanic convulsions. ¼ grain of morphine and $\frac{1}{200}$ grain of atropine were given to control tetanic contractions, which soon became milder, but were very painful. 20 grains of ipecac were given, and, no emesis following, in a few minutes salt and warm water were given, followed by 10 grains of ipecac, after which emesis was produced. Emesis was produced a second time by a dose of mustard in warm water, and a second hypodermic injection of morphine and atropine was given. Immediately on the first appearance of the symptoms of poisoning, the woman's husband had commenced the administration to her of lard in half-cupful quantities until about a pint had been taken. As the case recovered, it is probable that delayed absorption from coating of the stomach with lard was largely concerned in the production of the result, since it is stated that the capsules were very old, and were, therefore, probably insoluble.

A TWO HUNDRED THOUSAND DOLLAR LIBEL SUIT.

Suit has been entered by William Radam, manufacturer of Radam's Microbe Killer, against the *Druggists' Circular*, of New York, for two hundred thousand dollars damages, the largest amount, so far as heard from, that was ever asked for in a libel suit of this kind.

The pleadings show that the action is brought to recover damages claimed to have been done the business of the plaintiff by an article published in the *Druggists' Cir-*

cular for September, 1889. This article gave the result of an analysis of the Microbe Killer, made by DR. R. G. ECCLES, a prominent chemist of Brooklyn, who stated that an identical preparation could be made by the following formula :

Oil of vitriol (impure), ʒiv;
Muriatic acid (impure), ʒi;
Red wine, about ℥i;
Well- or spring-water, Oviii.

This mixture, it was alleged, could be made at a cost of less than five cents per gallon, for which Radam charged three dollars.

It was further alleged that, while, when properly used, sulphuric acid, the principal constituent of the Microbe Killer, was a valuable medicine, it was, when taken without due caution or advice, a slow but certain cumulative poison ; and the theories advanced by Radam, as to the causes of diseases and the proper method of treatment, were alleged to be totally erroneous. Colonel Robert G. Ingersoll, the famous lecturer, is the counsel for the plaintiff.

The *Druggists' Circular*, which is published at 72 William Street, New York, expresses a desire to hear of any case in which unfavorable results have followed the administration of the Microbe Killer, or of any other fact that would be interesting under the circumstances. They claim to have published this analysis without malice, and with the sole intention of protecting the public from the loss of their health and money by the use of a dangerous nostrum.

THE PRESENCE OF THE DIPLOCOCCUS OF PNEUMONIA IN THE MILK OF A WOMAN AFFECTED WITH PNEUMONIA.

At a recent meeting of the Academie de Médecine de Turin (*Bulletin Général de Thérapeutique*, October 15, 1890), PROFESSOR BOZZOLO announced that on the 7th of June last a woman who had been nursing for six months came under his care suffering from an attack of left croupous pneumonia, which was followed shortly by endocarditis, and, finally, by pneumonia of the right side with delayed resolution. Cultures of the milk obtained from this patient were made in bouillon, and abundant development of the diplococcus of pneumonia were determined both by the morphological characters of the micro organism and by the inoculation experiment. The child, however, did not show any evidences of ill health.

This observation of Professor Bozzolo seems to confirm the idea generally held that the diplococcus, like numerous other bacilli, may pass into the secretions, and thus confirms from a clinical point of view the experiments of Joa and Bordon Uffreduzzi, who found this micro-organism in the milk and in the blood of infected rabbits.

SCARLATINA WITHOUT PYREXIA.

DR. WERTHEIMER mentions in the *Münchener Medicinische Wochenschrift* a case of scarlatina occurring in a child 7 years of age, in whom, though the eruption was well marked, and the tonsils and tongue presented their characteristic appearance, there was absolutely no pyrexia either morning or evening, the highest point reached being 99.6° F. The pulse, however, was rapid, being from 116 to 120 during the first three days. There was no albuminuria ; desquamation began on the ninth day. Dr. Wertheimer also mentions a second case occurring in a child of about the same age, where, though all the distinctive signs of scarlatina were present, the only time there was any abnormal temperature was the evening of the second day ; then it was 100.6°. Here, too, there was marked rapidity of pulse, and he suggests that this is probably an important sign in diagnosticating the rare cases of apyrexial scarlatina. His opinion is confirmed by Dr. Beetz, who immediately after the appearance of the article reported two other apyrexial cases where the pulse was also very rapid.—*Lancet*, October 4, 1890.

STERILIZED MILK.

So called "sterilized milk" by no means always deserves its name, in some cases being much fuller of germs than ordinary unboiled milk fresh from the cow. HERR KOHLMANN, of Leipsic, on subjecting two specimens of milk sold as sterilized to examination, found that one of them really was so, no germs being discoverable ; while the other specimen contained 350,000 germs per cubic centimetre. For the purpose of comparison other examinations were made, and it was found that a sample of fresh milk bought in the street contained about 160,000 germs per cubic centimetre,—that is to say, less than half

the number in the second sample of so-called sterilized milk. Milk boiled in the kitchen contained 158 germs per cubic centimetre; distilled water kept in an open vessel, 430; water-works water, 1064; and water from the Hofbrunnen, 12,000. Herr Kohlmann suggests that the failure of whatever process was used to sterilize the milk may have been due either to water having been mixed with the milk before the process was commenced, or perhaps to too long a time having been allowed to elapse between milking and sterilizing. This last point exercises a very great effect, as is shown by Freudenreich's observations. He found that milk which when received contained only 9300 germs to the cubic centimetre, after being kept for three hours at 60° F., contained 10,000; after six hours, 250,000; and, after twenty-four hours, no less than 5,700,000. It would, therefore, appear that our knowledge of the conditions under which milk may be really sterilized is at present somewhat insufficient, and that reports of the results of the feeding of infants with milk which is reputed to be sterilized must always be received with a good deal of scepticism unless specimens of the milk have been frequently examined by a competent person.—*Lancet*, October 18, 1890.

A NEW EXCIPIENT.

According to the *Journ. de Conn. Méd.*, August 7, M. ADAM, a Parisian pharmacist, has produced a resin soap "which may be recommended as constituting a new pharmaceutical excipient." The formula is as follows:

Resin, 100 parts;
Carbonate of potassium, 30 parts;
Water, 300 parts.

The components are heated to the boiling-point, when an effervescence takes place, the product being finished when the disengagement of gas ceases. The heat may be continued, however, until any desired consistency is obtained. The product may be made hard, if necessary. This soap is soluble in water, and does not give a precipitate with marine salt. It may be used as an excipient for a great many drugs, and it has the advantage of being less costly than either vaseline or cerate. It should not be used with metallic salts, owing to the liability to double decomposition. Resin soap works well with mercury, and mixes freely with camphor, naphthol, sulphide of carbon, tar, etc. It does not make a homogeneous product with the oil of cade. It appears to have been serviceable thus far in the preparation of some of the remedies used by veterinary surgeons.—*American Journal of Pharmacy*, October, 1890.

ÆTHYL BROMIDUM.

Three cases of poisoning from æthyl bromidum have recently been reported from Berlin, where it seems to be much used as an anæsthetic for dental as well as for small surgical operations, and DR. MITTENZWEIGS warns people against its employment. Some years back æthyl bromidum was used in this country extensively, as it has the advantage of acting quickly and rarely producing sickness, but the number of fatalities attending its use has led to its loss of popularity. As far as we know, it is a drug but little, if at all, employed by English dental surgeons.—*Lancet*, September 20, 1890.

CHLOROFORM AND PHTHISIS.

DR. SAMUEL O. L. POTTER thinks that he has discovered a cure for tuberculosis in the almost continuous inhalation of chloroform. He says that, as a result of some experiments, he feels convinced that this bacillus may be destroyed, and its victims saved, by the continued use of chloroform inhalation, systematically carried on, day by day, by means of suitable apparatus, and with the care necessary to prevent injurious results or accidental poisoning. "There is no need for the anæsthetic action being induced; but the inhalation can be kept up continuously for several hours daily, and maintained short of general anæsthesia."—*New York Medical Record*, November 1, 1890.

TREATMENT OF INGROWN NAIL.

DR. PÜRCKHAUER moistens the surface of the diseased nail with a lukewarm forty per cent. solution of caustic potash, and then scrapes off the softened upper layers with a sharp-edged piece of glass. After a second application of the potash solution, the scraping is continued until the nail is as thin as a sheet of paper. It is then lifted up from the soft parts with forceps, and the diseased parts are excised. The operation, which is unattended with hemorrhage, has been uniformly successful in the author's hands.—*International Journal of Surgery*, October, 1890.